Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL AND OTHER IMPROVEMENTS.

VOL. XIII. NEW YORK, AUGUST 21, 1858. NO. 50.

THE
SCIENTIFIC AMERICAN,
PUBLISHED WEEKLY
At No. 128 Fulton street, (Sun Buildings,) New York,
BY MUNN & CO.

O. D. MUNN, S. H. WALES, A. E. BEACH.

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Liability of Telegraphic Companies in England.

The Court of Queen's Bench, says the London *Times*, was lately occupied with a case of great importance to the commercial world. In the month of July, 1857, a report reached the head-quarters in London of the South Eastern Railway Company that the Lewes Bank had stopped payment. The cashier of the company adopted the report, and telegraphed to their servants at the various stations on the line that they were to take no more notes or checks on the Lewes Bank. The notice of the alleged stoppage was also posted up at some of the stations, alongside a correct announcement that the Hastings Bank had suspended payment. In consequence of the publication of the false report, there was a run upon the Lewes Bank, in order to meet which the securities had to be realized at an enormous loss. The jury gave a verdict for the plaintiff, with $10,000 damages. It appeared from the statement of the counsel that if the message of the cashier had not been published at the stations, it might have been looked upon as a privileged communication between the cashier and the subordinate servants of the company.

Remedy for Sunstroke.

Dr. Dickson, of London, who was formerly a medical officer in the British army, disapproves entirely of bleeding in cases of sunstroke, but relies upon ammonia, quinine, and alcoholic stimulants, and the prompt application of cold water to the head. This is upon the principle that opening a vein diminishes the power of the heart, already deficient, while the stimulants being diffusive in their character, at once tend to give vitality to every portion of the system, and restore the circulation to the standard of health. Ammonia is preferable to alcoholic stimulants, as, while it is equally prompt and potent in its action, its application is not attended with the injurious and sometimes fatal re-actionary effects of spirits.

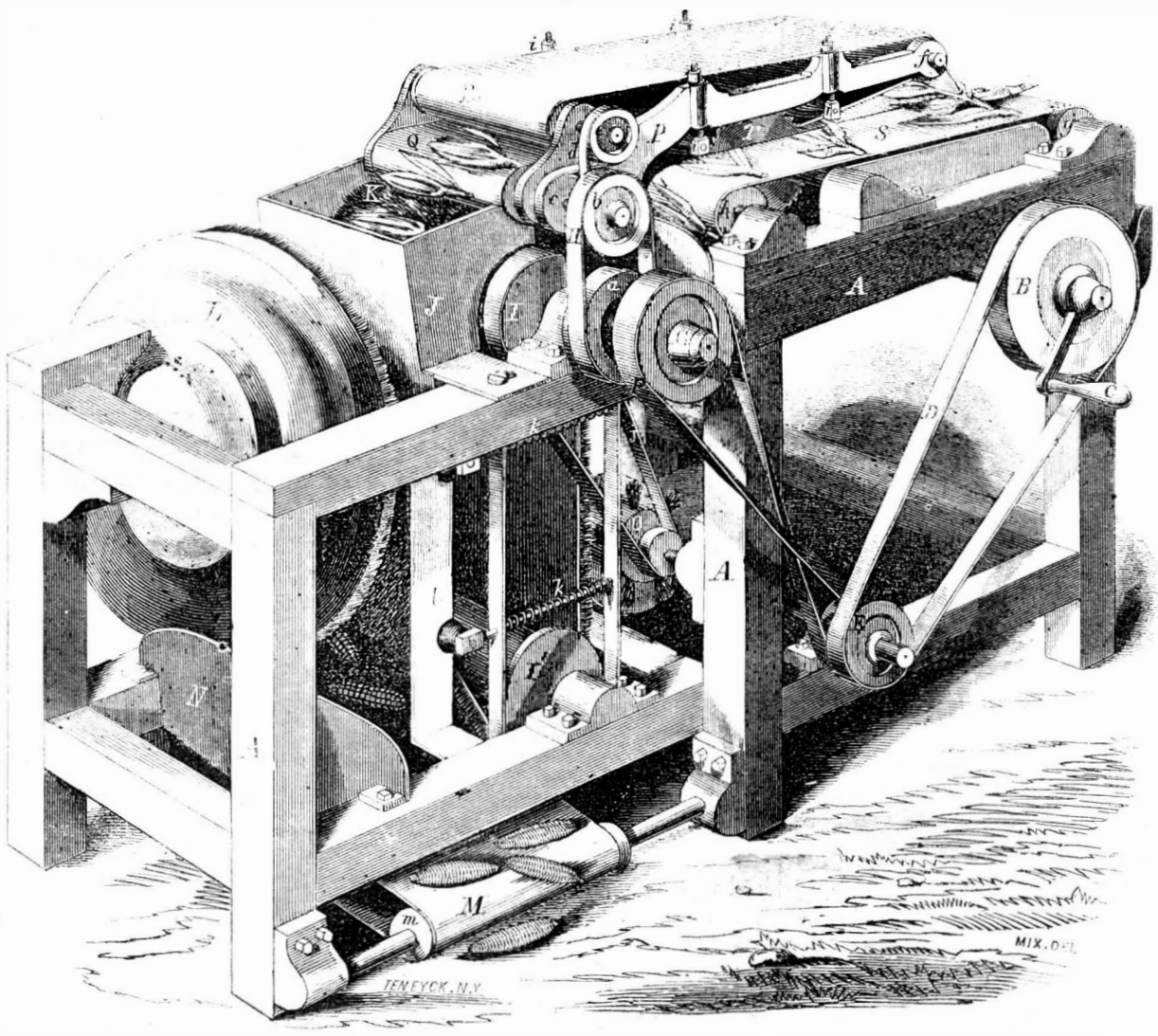
Kentucky Mechanics' Institute.

The sixth exhibition of this institute will commence at Louisville, Ky., Sept. 14th, and the directors will be ready to receive goods for exhibition on the 7th. As all machinery, &c., is to be in actual operation, persons intending to exhibit are requested to inform Mr. D. Macpherson, Secretary of the Exhibition Committee, as to the amount of space and power they will require.

THE METALLIC OIL advertised in another column is an excellent article for lubricating machinery. It is durable and economical, and having stood the severest tests for some years past, we can cordially recommend it.

We have to thank Commander Thos. Page, of the U. S. steamer *Waterwitch*, for maps of his survey of the river Parana in that ship.

SMITH'S PATENT CORN HUSKER.



The subject of our illustration is designed to husk corn perfectly without in any way injuring the corn, and the corn being fed to it with any length of stalk will be delivered from the machine perfectly free from husk and stalk. The working parts are mounted in a frame, A, and the power is given to a wheel, B, by the handle, C. D is a belt giving motion to E, from which the belt, F, rotates the wheel, G. On the shaft of G is a drum, I, round which passes the endless husking band, K, being provided with wire teeth, something like a carding belt. This band, K, also passes over small rollers in the frame, *l*, which can give to pressure and again assume their original position by their bearings being on the ends of spring rods, *k*; K also passes round another drum, I′. In front of K is a wheel, L, provided with wire teeth, and it is in passing between these two that the husk is torn off. From the drum, I, passes a band wheel, *j*, rotating a brush, O, which serves to clean the wire teeth upon K; there is also a cleaning brush to L. From a small wheel, *a*, on the shaft of G, a band wheel, H, passes, rotating a small pulley, *b*, at the extremity of a frame, P, which extends over the feeding device, and on the axis of *b* is a drum, around which passes the endless feeding band, Q. From a wheel, *c*, on the same axis, a band, *d*, rotates the wheel, *e*, which gives motion to the upper endless feeding band, R, that also passes around another drum, *f*, and under rollers whose bearings are so arranged as to keep the band, R, tight and yet give to pressure, by bars and springs, *i*. Underneath P two saws rotate, one on each side, and between them Q and R pass. S is another endless band, there being one each side, passing over rollers, *h* and *g*.

The operation of this machine is as follows: The corn with stalk attached is placed on the endless bands, Q and S, and they are carried between R and Q until they come in contact with the saws, T, which cut off the butts and stalks; and the motion of the bands over and under the corn while it is momentarily stayed by the saws serves to slightly loosen the husk. The corn is carried on and falls into the hopper, J, which guides it between the endless husking board, K, and the husking wheel, L, from which it drops perfectly husked on to the delivering band, M, on the roller, *m*. This is operated by a pulley and band on the side of the machine not seen in our engraving, rotated from the axis of E, that passes directly across the machine. N is a guard plate, to ensure the fall of the ears on to M.

This ingenious device is the invention of W. H. Smith, No. 139 Thames st., Newport, R. I., and is the subject of two patents, one dated October 28, 1856, and the other October 6, 1857. The inventor will be happy to give any further information upon being addressed as above.

The Original Morgan Horse.

The Springfield (Mass.) *Republican*, speaking of the origin of this noble breed of horses, asserts that Massachusetts has done many good things, among which is giving to Vermont the credit, and the world the benefit, of the celebrated Morgan horse. It appears that near the close of the last century a singing master by the name of Justin Morgan lived in Chicopee street, West Springfield. The place where this man lived has been pointed out to the writer in the *Republican* by one who knew him and remembers his celebrated horse. In the spring of 1793 he raised the colt which has given celebrity to his name; and although a promising one, and fully appreciated by its owner, who was noted for his passion for good horses, it is believed that this horse could have been bought for fifty dollars.

Fortune frowned upon Mr. Morgan; and, seized with the spirit of adventure, about the year 1798 he migrated with his family and horse to the wilds of Randolph, Vt. Here he lived a few years, and died poor. Like the projectors of many valuable inventions, neither he nor his family realized profit from the skill and labor displayed in preserving the stock of this horse, who was the foundation of a breed which has given both wealth and character to New England. In this case is forcibly illustrated the influence of an ordinary action. Justin Morgan might or might not have been conscious of the results, when sixty-five years ago he raised that famous colt. The act was simple in itself, but the consequences are momentous. An impetus was then given to a branch of industry whose power is not yet fully felt. Wherever the horse is known there shall the name of Justin Morgan be repeated. The Morgan horse is destined to give as much celebrity to New England as the barb of the desert to Arabia. As a farm and family horse the "Morgan" is unequaled. Docility, hardihood, endurance, compactness, and sure footedness are his invariable properties.

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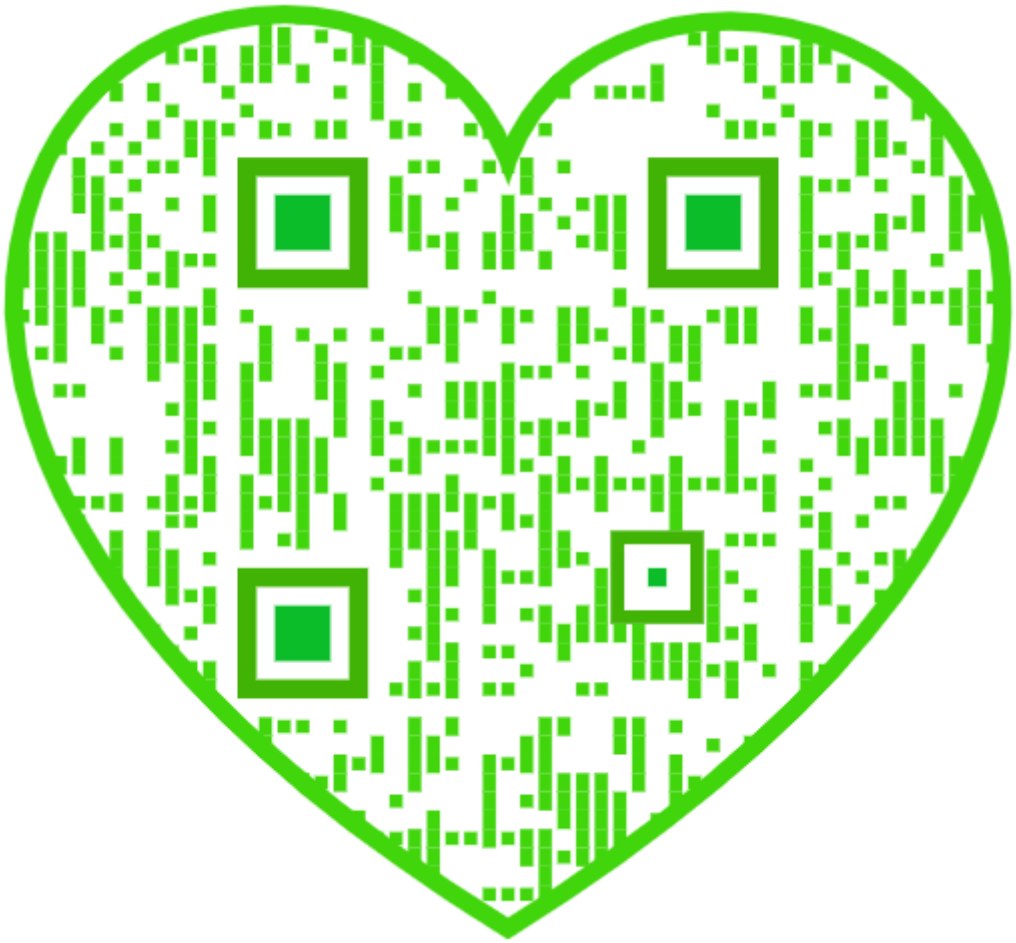

IMPORTANT TO INVENTORS.

The rapid growth of our Patent Agency business during the past three years has required a great addition to our ordinary facilities for its performance, and we are now able to announce the completion of a system which cannot fail to arrest the attention of all who have business of this kind to transact.

OUR PRINCIPAL OFFICE

will be, as usual, at No. 128 Fulton street, New York. There is no other city in the Union so easy of access from every quarter as this, consequently there are greater advantages in regard to the transmission of models, funds, &c., through the various channels that center in New York. Two of the partners of our firm reside here, and during the hours of business are always at hand to counsel and advise with inventors. They are assisted by a corps of skillful Examiners, who have had many years of active experience in the preparation of cases for the Patent Office.

To render our Patent Agency Department complete in every respect, we established over a year ago a

BRANCH OFFICE IN THE CITY OF WASHINGTON,

on the corner of F and Seventh streets, opposite the United States Patent Office. This office is under the general superintendence of one of the firm, and is in daily communication with the Principal Office in New York, and personal attention will be given at the Patent Office to all such cases as may require it. Inventors and others who may visit Washington, having business at the Patent Office, are cordially invited to call at our office.

A SPECIAL NOTICE.

We especially require that all letters, models and remittances should be made to our address at New York.

EXAMINATION OF INVENTIONS.

We have been accustomed from the commencement of our business—thirteen years since—to examine sketches and descriptions, and give advice in regard to the novelty of new inventions, *without charge*. We also furnish a printed circular of information to all who may wish it, giving instructions as to the proper method which should be adopted in making applications. This practice we shall still continue, and it is our purpose at all times to give such advice free and candidly to all who apply to us. *In no case will we advise an inventor to make application unless we have confidence in his success before the Patent Office.*

Our extensive experience in mechanical and chemical improvements enables us to decide adversely to nearly one half of the cases presented to us for our opinion, before any expense has occurred in the preparation of the case for a patent.

When doubt exists in regard to the novelty of an invention, we advise in such cases a

PRELIMINARY EXAMINATION

to be made at the Patent Office. We are prepared to conduct such examinations at the Patent Office through our "Branch Agency," upon being furnished with a sketch and description of the improvement. Our fee for this service will be $5.

After sufficient experience under this system, we confidently recommend it as a safe precautionary step in all cases before application is made for a patent—not that there will be no rejections under this system. It is impossible to avoid such results in many cases, owing to the exceedingly wide range taken by the Examiners in the examination of cases; but, nevertheless, many applicants will be saved the expense of an application by adopting this course. Applicants who expect answers by mail must enclose stamps to pay return postage.

THE COSTS ATTENDING AN APPLICATION

for a patent through our agency are very moderate, and great care is exercised in the preparation of specifications, drawings, &c. No cases are lost for want of particular care on our part in drawing up the papers, and if the claims are rejected, we enter upon a speedy examination of the reasons assigned by the Commissioner of Patents for the refusal, and make a report to our clients as to the prospects of success by further prosecution.

A circular containing fuller information respecting the method of applying for patents can be had gratis at either of our offices.

REJECTED APPLICATIONS.

We are prepared to undertake the investigation and prosecution of rejected cases, on reasonable terms. The close proximity of our Washington Agency to the Patent Office affords us rare opportunities for the examination and comparison of references, models, drawings, documents, &c. Our success in the prosecution of rejected cases has been very great. The principal portion of our charge is generally left dependent upon the final result. All persons having rejected cases which they desire to have prosecuted are invited to correspond with us on the subject, giving a brief history of their case, enclosing the official letters, &c.

FOREIGN PATENTS.

We are very extensively engaged in the preparation and securing of patents in the various European countries. For the transaction of this business we have offices at Nos. 66 Chancery Lane, London; 29 Boulevard St Martin, Paris; and 26 Rue des Eperonniers, Brussels. We think we may safely say that three-fourths of all the European patents secured to American citizens are procured through our Agency.

Inventors will do well to bear in mind that the English law does not limit the issue of patents to inventors. Any one can take out a patent there.

Circulars of information concerning the proper course to be pursued in obtaining patents through our Agency, the requirements of the Patent Office, &c., may be had gratis upon application at the principal office or either of the branches.

Communications and remittances should be addressed to
MUNN & COMPANY,
No. 128 Fulton street, New York.

The annexed letter from the late Commissioner of Patents we commend to the perusal of all persons interested in obtaining patents:—

MESSRS. MUNN & CO.—I take pleasure in stating that while I held the office of Commissioner of Patents, MORE THAN ONE-FOURTH OF ALL THE BUSINESS OF THE OFFICE came through your hands. I have no doubt that the public confidence thus indicated has been fully deserved, as I have always observed, in all your intercourse with the Office, a marked degree of promptness, skill, and fidelity to the interests of your employers.

Yours, very truly, CHAS. MASON

Issued from the United States Patent Office

FOR THE WEEK ENDING AUGUST 10, 1858.

[*Reported officially for the Scientific American.*]

*** Circulars giving full particulars of the mode of applying for patents, size of model required, and much other information useful to inventors, may be had gratis by addressing MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, New York.

STRAW CUTTERS—Darius Babcock of Dryden, N. Y.: I do not claim a rotating cutter wheel with knives or cutters attached, so arranged that the cutters work over the mouth of the feed-box, for this is an old device.

But I claim operating the feed rollers, D D, through the medium of the levers, F F, rods, H H, connected with said levers by means of the sliding collars, b, palls, G G, and crank pulley, d, arranged substantially as described and for the purpose specified.

[This invention relates to an improvement in that class of straw, stalk, and hay cutters, in which knives are attached to a rotary wheel, the plane of rotation of which is at right angles with the mouth of the feed-box. The invention consists in placing the feed-box in an inclined position instead of having it in a horizontal position as usual, and arranging the cutter wheel so that the material to be cut may be readily fed to the knives, and the cutting operation of the cutter greatly facilitated. The invention also consists in the employment of a leger blade of novel construction, to facilitate the cutting action of the knives, and in an improved feed gear, so that the feed may be regulated as occasion may require.]

MACHINE FOR THRESHING AND SEPARATING GRAIN—N. J. Becker and J. M. Harvey, of Amsterdam, N. Y.: We claim the combination of the swinging arm or arms, S S, straw carrier brackets or projections, m m, elbow lever, T, connecting by links, n p, the swinging arm, S, to the separator, pitman, v v, operated by crank pin from the fan shaft to drive the swinging arm, S, and fan and threshing cylinder pulleys, D E, arranged substantially as described, and driven by the same band or belt as set forth.

We do not claim the combination of a reciprocating or independently moving perforated straw carrier with a stationary bed plate, but as gearing the serrated bar frame, G, to the perforated bed plate, H, and conducting board, I, that said latter portion shall give an accelerated motion to the bar frame G, simultaneously with, but in reverse directions to the travel of the bed plate, essentially as and for the purposes set forth. Providing the feeding throat of the thresher, or thresher concave, with a dust spout or outlet, Z, above and furnishing the cylinder race with a dust passage, X, in front, under the feed table, as shown and described.

SEED PLANTERS—Addison Berdan, of Macon, Mich.: I claim the arrangement of the reciprocating piece, L, adjustable tubes, 3, stationary piece, M, and top plate, N, with hoppers, O, the whole being constructed for operating conjointly as set forth.

HARROW—Addison Berdan, of Macon, Mich.: I claim the combination of tooth bars, T, having projections, W, with guide, V, oscillating lever, O, and frame, u, the whole being constructed, arranged and operated as set forth.

MACHINES FOR ROLLING LEATHER INTO BALES—Nathan Burk, of Fulton, N. Y.: I claim, in combination with the winding and clamping shafts, the spring table with its friction roller, stops and string guides, arranged and operating together in the manner and for the purpose set forth.

WIND GUARD FOR CHIMNEYS—F. M. Butler, of New York City: I do not limit myself to the size or shape of my wind guard, whether round or polygonal, although I prefer the former or an oval.

What I claim, is the arangement of the pipe, b, radial guard, d, inner disk, e, and hood, f, when in substantially the proportions and for the purposes specified.

OPERATING THE TEETH OF CYLINDERS FOR BURRING WOOL, &c.—T. B. Butler, of Norwalk, Conn.: I claim the application of teeth to a rotating cylinder having an uniform peripherical surface, in such a manner as to be projected beyond the said surface to catch the fibrous materials to be operated upon and afterwards retracted into pockets within the said peripherical surface, for the purpose of holding said material and presenting the greater portion of it upon the even peripherical surface of the cylinder without any obstruction to the action of strippers, brushes, or other analogous devices for burring, ginning or cleaning it, operating in combination with said cylinder, substantially as described.

[The result obtained by this improvemeut is the distribution of the fibers over a smooth and uniform surface, upon which they are held firmly without being cut, while they are closely and at all points alike subjected to the action of as many strippers, brushes, or analogous devices as may be necessary to clean them, without the necessity of making the toothed cylinder or strippers, brushes or other cleaners rotate at a high velocity, which is very objectionable.]

MACHINE FOR CHAMFERING AND CROZING BARRELS—A. H. Crozier and Cyrus Carrier, of Oswego, N.Y.: We claim the method described of moving the crozing and chamfering tools to and from their work by means of the differential movement of the wheels, Q and S, produced in the manner described when operating the cam or eccentric which controls the action of the tools, all substantially as specified.

METALLIC LATH SURFACE—John B. Cornell, of New York City: I claim the described improved shape of the sheet metal sections, c, c', which enables them to securely retain coatings of plaster, when the said sections are secured to vertical supports, and which also enables said sections to be securely combined with partition studs without the aid of nails, screws or bolts, substantially as set forth.

SAFETY GUARD FOR SAFE DOORS—John B. Cornell, of New York City: I claim arranging a safety guard within the door of an iron safe, in such a manner with relation to the lock or locks, and the fastening bolts which are combined with said door, that the act of forcibly displacing the said lock or locks from its or their proper position on a locked door, will cause the said safety guard to be thrown into such a position that it will securely hold the said fastening bolts in an extended position from the moment that the lock bolts cease to exert a retaining action on the said fastening bolts, all substantially as set forth.

APPLYING BRAKES TO HAND TRUCKS—C. L. Daboll, of New London, Conn.: I claim the application of the described devices to hand trucks, in the manner and for the purposes set forth.

APPARATUS FOR PURIFYING GAS—W. F. Danowsky of Allentown, Pa.: I claim the use of the purifier, D, when arranged and combined with a gas trap, E, in the manner and for the purpose described.

TREATMENT OF CAOUTCHOUC—Austin G. Day, of Seymour, Conn.: I do not claim in the broad, vulcanizing rubber or equivalent gums, and irrespective of the special process used and product made. Therefore—

What I claim is, running the heat for vulcanizing elastic hard rubber compounds as set forth through the several grades of temperature, and the several intervals of time described and illustrated in the specification.

I also claim making, as described, the elastic, hard rubber composition of two parts by weight of rubber, and one part of sulphur, when such composition is made preparatory to the running of the heat through the several grades of time and temperature as set forth in the specification.

I also claim equalizing the temperature in the heating apparatus by mechanical means or by a current of steam, or its equivalent, in the manner set forth.

BED BOTTOM—W. H. Elliot, of Plattsburg, N. Y.: I am aware that beds have been constructed with springs, slats, and flexible strap, therefore I do not claim them or any of them independent of other devices, or of the peculiar arrangement set forth.

But I claim the combination and arrangement of braces, d', flexible strap, e, slats, d and c, and springs, b, whether the said braces, d', reach from one outside slat to the other, or only to some of the intermediate slats, and whether said braces are attached to the upper or lower side of slats, d, &c., as and for the purpose specified.

HINGES—W. H. Elliott, of Plattsburg, N. Y.: I claim combining with the table hinge, a portion of the rule joint, as specified.

HARVESTERS—M. E. Ellsworth, of Hudson, Ohio: I claim the described manner of attaching the seat to the gear plank by means of the rods, M N, or their equivalents, having a pin or hinge point both upon the gear plank and footboard in combination with the rods, O and P, or their equivalents, which connect the footboard, C, directly with the reach board, E, all operating in the manner and for the purpose set forth.

APPARATUS FOR TANNING HIDES—L. C. England, of Owego, N. Y.: I claim the described improvement in the art of tanning—that is to say, causing the liquors to circulate among hides, which are kept in fixed positions, for the purposes and substantially in the manner set forth,

SEED PLANTERS—H. C. Fairchild, of Brooklyn, Pa.: I am aware that seed distributing devices formed of movable and stationary plates or slides, and a cut-off similar to the device herein described, have been used, but I am not aware that a distributing device has been arranged with a rotating or semi-rotating seed box and plunger, so that the distributing of the seed, and the operating of the plunger, could be effected by rotating the seed-box. I do not claim, therefore, broadly and separately, the distributing device; but

I claim the rotating or semi-rotating seed-box, A, provided with the cylindrical case, B, fitted within the case, C, in connection with the plunger, E, connected with and operated by the movement of case, B, as shown, the plunger case, D, attached to case, C, and the seed distributing device formed of the perforated bottoms, d, f, of the cases, B C, and the cut-off, I, the whole being arranged for joint action, substantially as and for the purpose set forth.

[This invention consists in having the lower end of the seed-box fitted within a stationary cylinder, to which a plunger and case are attached, the seed-box being allowed to rotate, and by its movements distribute the seed and operate the plunger.]

CULTIVATORS—N. W. Fraser & A. J. McLellan, of Laporte, Ind.: We claim the arrangement of the fender, D, attached to the shovel standards, D', the shoves, E, and the wheels, A, on the vertical shafts, a, the whole being arranged for joint operation as set forth and described.

SEWING MACHINES—James E. A. Gibbs, of Millpoint, Va.: I claim so constructing and combining or arranging and operating a revolving hook or looper with a reciprocating needle, as that the one loop shall be taken from the needle after the former loop shall have been drawn up on, along or over the needle during its advance movement, in the manner and for the purpose substantially as described.

I also claim the conical sleeve or its equivalent for holding the spool and for revolving therewith, in combination with the adjustable cones, F and G, or their equivalents, for producing the requisite degree of friction upon the conical sleeve spool holder, when constructed and arranged so as to operate substantially in the manner and for the purposes set forth.

LOCOMOTIVE STEAM ENGINES—John C. Hagan, of Nashville, Tenn.: I claim, first, Arranging the cylinder of a steam engine substantially as described, or in an equivalent manner, so that it is free to move at right angles to the motion of its piston rod, and in a plane parallel with the plane of motion of the cranks connected with the rod.

Second, In combination with the cylinder of a steam engine, arranged so that it is free to vibrate, I claim connecting each end of the piston rod with the crank of a driver, and giving motion to both drivers in the same direction, without the interposition of connecting links.

Third, Giving to the cylinder of a steam engine a positive reciprocating motion, by combining therewith a secondary engine, or any equivalent mechanical device arranged so as to support and move the cylinder in a plane parallel with the plane of motion of the cranks connected with its piston rods, and in right angles to the line of motion of the piston rod.

Fourth, Supporting the main cylinder in the guides in which it vibrates, by means of trunnions arranged as described, so that the cylinder may accommodate itself to the axles of the drivers on an uneven track.

Fifth, Connecting the slide valves of the secondary engine with the quadrant block of the expansion gear of the main engine, by which means the motion and the changes in the valves of both engines are uniform and simultaneous.

Sixth, The combination of the slotted link (P L), the cam block, F, the pump hand gear, or any mechanical equivalents, whereby not only can the length of stroke of the pump be varied during the motion of the engine, but also the pump may be worked while the engine is at rest, as described.

Seventh, Combination of the sliding steam pipes with the main driving cylinder, arranged substantially as described, for the purpose of admitting steam to the cylinder.

CLOTHES RACK—A. A. Harris, of Ravenna, Ohio: I do not claim the employment or use of folding or expanding arms, broadly or irrespective of the arrangement shown and described, but,

I claim the radical arms, so jointed or pivoted to hubs that they will be supported by the joints or attachments to the hub, the hubs being loose on the staff, so as to revolve, and at equal distances apart, to form a series of horizontal and parallel frames, each of which series may be folded up separately, and the whole be adjusted vertically by the main staff, as set forth.

APPARATUS FOR HEATING AND COOLING AIR, TO BE USED AS A MOTIVE POWER—W. Hidden & J. Reeves, of New York, N. Y.: We claim, Heating air in one section of a rotating or reciprocating cylinder, and at the same time condensing the exhausted air from the engine in another section of the same cylinder, and at intervals changing the condensing section into a heater, and the heating section to a condenser, by revolving or reciprocating the cylinder so as to alternately have the upper section occupy the place of the lower section in a tank of water, and the lower section to occupy the place of the upper one in proper relation to a furnace flue, substantially as and for the purposes set forth.

TELEGRAPHIC INSTRUMENTS—George B. Hicks, of Cleveland, Ohio: I claim the described devices or their equivalents, by means of which, two armature levers, one of which is upon the receiving instrument, and the other upon the recording instrument, are moved simultaneously, as seen in figures 4 and 6, in order to render it impossible for any portion of the current from M2 or N2 to pass through the magnets M M or N N, figures 2 and 5, except when required to change the position of lever, G, G'.

I claim the described arrangement for so connecting a circuit through the armature levers of the receiving and recording (local) magnets, figures 4 and 6, that a current may be diverted through the magnets M M or N N, figures 2 and 5, at the pleasure of a distant operator, and thereby changing the position of the lever, G G, figures 2 and 5, for the purpose of enabling the operators upon two distant circuits to transmit intelligence from one circuit to the other without the aid of an intermediate operator, by the means and in the manner specified.

I claim the employment of the devices named or their equivalents, whereby a current from the battery, s, may be diverted from one magnet, M M, to another, N N, as set forth by means of the arm, I, (upon the lever, G G, figures 2 and 5,) striking upon Z Z', as the lever, G G', is depressed at X or X'.

SHIP'S WINDLASS—Peter H. Jackson, of New York, N. Y.: I claim the bit, l, taking the end of the shaft, b, as specified, when combined with the brace, n, block, o, and key, i, or their equivalents, substantially as and for the purposes set forth.

CABLE STOPPER—Peter H. Jackson, of New York, M. Y.: I do not claim a hinged chain stopper, as this has before been used, but,

I claim the combination of the cam lever or levers, g, with the hinged pall, e, in the manner and for the purposes substantially as specified.

HANGING WINDOW SASH—Ross Johnson, of Frederick, Md.: I claim side boxes, G G, constructed on the face of the jamb, a, and arranged in front and at right angles to the face of the sash, in combination with narrow, oblong weights, D D, and with pulleys, E F, arranged in a manner adapted for the use of side boxes, and flat weights, substantially as and for the purposes set forth.

SEED PLANTERS—E. W. Kimball, of Ottawa, Ill.: I claim the slide B, placed within the box or case, A, perforated at D, and provided with the endless band, c, and the seed cap, D, attached, in connection with the elastic or yielding plate, e, and rest plate or guide, f, placed at the lower end of the box or case. It being understood that I do not claim separately any of the parts, but the whole combined and arranged, as and for the purpose set forth.

[The object of this invention is to obtain, by the employment of a very few parts judiciously arranged, an efficient hand seed planter—one that may be readily manipulated, economically constructed, and not liable to get out of repair. The invention consists in placing a reciprocating hand slide within a proper case, and having an endless band provided with a seed cup, the slide dividing the case into two parts, and having an opening made in it to allow the seed to pass through.]

BATHING APPARATUS—Frederick Kraemer, of Brooklyn, N. Y.: I claim the tub, A, constructed of two semi-cylindrical portions, a, b, connected together as shown in connection with the steps, c, supply cocks, h, h, and discharge valves, B, the whole forming a new and improved article or apparatus for the purpose specified.

[The object of this invention is to obtain within reasonable dimensions a bathing device whereby a complete bath may be taken, or the body entirely immersed equally as well as in a large bathing house. The invention is designed to be used in private houses, and to be a portable affair, that may be moved from place to place with facility and fitted up as occasion may require.]

MACHINES FOR CLEANING WHEAT—Jesse Lantz & John Russell, of Wheeling, Va.: First, We claim the additional air tube or arch, F, in connection with the air tube or arch, E, for the purpose of receiving the wheat through an aperture in pipe, F, above the hopper, V, and from the hopper, G, as described.

Second, We claim the adjustable reeded rubber, o, combined with the flange rubber, i, constructed and operating, as and for the purposes described.

ROCK DRILLS—William Lewis, of Harrisburgh, Pa.: I claim, first, The combination of the peculiarly constructed lifting jaw, c, with the peculiarly constructed vibrating flexible frame, D, a, and inclined planes, E, E', whether operated by a lever or other mechanical device, substantially as set forth.

Second, The peculiarly constructed vibrating flexible frame, D, a, for holding the lifters together, and shifting them out of the way alternately, substantially as set forth.

Third, The united use of the lever, E, and strap, b, for operating on the lifting jaw, c, incline plane, E'', for turning the bar, B, and flexible vibrating frame, D, a, for throwing the jaw out of gear with the drill bar, B, substantially as and for the purposes specified.

MACHINE FOR CORING AND QUARTERING APPLES—Charles Lounsberry, Jr., of Nichols, N. Y.: I am aware that the knife with a handle attached has been operated before now by hand, and therefore do not claim it.

I claim the combination and arrangement of the knife with the movable step, i, I, the standard, a, with its attachment, d, the cup, h, h, and spring, s, being substantially made as described and for the purpose set forth.

APPARATUS FOR GENERATING GAS—Henry Lyles, of Washington, D. C.: I do not claim any of the members of this apparatus singly or individually.

But I claim the peculiar arrangement of the perforated chamber, A, as constructed with the retort, a, gage cock, c, stop cock, g, and siphon pipe, f, when they are constructed, combined and operated in the manner and for the purpose specified.

RETORTS FOR DISTILLING OILS FROM COAL—John McCue and W. B. McCue, of Freeport, Pa.: We are aware that there is a retort patented by Alter & Hill, which revolves continuously. We are also aware of Gengember's patent, but both of these we disclaim, as our retort obviates difficulties which both of these patents are subject to.

But we claim, first, The employment of the connecting pipe, C, located in the retort, B, in other than a central position, whereby we are enabled to conduct off the oleaginous products of the coal, while the said retort partially revolves backward and forward on its axis as is fully set forth.

Second, We claim providing the retort, B, with the longitudinal ribs, d d d, for the purpose of agitating the coal, and preventing its sliding, when the retort turns as is fully described.

MACHINES FOR FANNING AND ASSORTING GRAIN—R. Nutting, of Randolph, Vt.: I claim, first, The arrangement of the screens for separating and assorting, substantially as described, when so combined with shoes, frames and motive arrangement, that the grain, seeds, beans, &c., are required to pass over them in a sliding or rolling manner, and not caused or allowed to drop on their surface or fall thereupon vertically, or so as to strike an aperture endwise first, constructed and operating substantially as set forth.

Second, The hold-fast, substantially as described and for the purposes set forth.

Third, The extra-screens box, substantially as described and for the purposes set forth, in combination with the drawers.

Fourth, The percussion bar, substantia as described and for the purposes mentioned.

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COUNTER SCALES—H. B. Osgood, of New Haven, Ct.: I claim the method of bringing the pea to standard weight, and to enable it to indicate weight from scales on opposite sides of the beam, consisting of the adjustable pins, in combination with the pea as described, substantially in the manner set forth.

ESCAPEMENT FOR TIMEKEEPERS—E. Paulus, of Philadelphia, Pa. : I claim the modification of the duplex escape wheel in suppressing the upright row of cogs, the manner of giving the impulse directly by it with a pin jewel set in the main roller mounted on the balance axis; the detent with its fork, toothed for gearing with the pinion of the resting cylinder, and its particular arrangement on the escape wheel axis; the arrangement of the resting cylinder with its pinion; the particular disposition of the lifting roller acting in the fork; the new and more solid arrangement to hold the escapement without bridges, but with simple pillars supporting two small plates secured with pins or screws, the whole constructed and operating as described, constitute a new escapement, which I introduce under the name of "Paulus escapement."

BAKE OVENS—Wm. Pettet, of New York City: I claim, first, The arrangement and construction of an oven with two furnaces, the one being located on the exterior and the other on the interior of the oven, each communicating with the same series of flues, so that either one may be used at pleasure, whereby the heat may be retained within the oven, or diffused through the apartment, substantially as set forth.

Second, I claim so constructing the interior of the described oven and its flues, that the entire lining may be removed, for the purpose of clearing the flues and replaced, substantially as described.

PRINTING INK ROLLERS—Elisha Pratt, of Salem, Mass.; I claim the employment of an alkali in the manufacture of inking rollers, in the manner and for the purpose substantially as set forth.

I also claim the use of rosin oil, rosin and shellac, in combination with the other materials employed in the manner set forth, for the purpose specified.

REPEATING FIRE-ARM—Franklin B. Prindle, of New Haven, Conn. : I am aware that many pistols, &c., are cocked by pulling the trigger, and that the charge has been carried to the rear end of the barrel by pulling a separate trigger, and that a tube has been used to contain the charges, and a spring to force them to the rear end of the tube.

And that pistols, &c., have been charged and discharged by the same trigger—as is seen in the patent issued to Lewis Jennings, December 25th, 1849—and that two charge tubes have been used under the barrel —as is seen in the application of Frederick Newbury, rejected and withdrawn, February, 1856. I therefore do not claim either of these, as such, as my invention.

But I claim the use of two charge tubes (one of which to contain the balls, and the other the cartridges), in combination with the two chargers and ramrod, when constructed, arranged, and made to receive the charge and deposit it in the barrel simply by pulling the trigger, substantially as set forth.

Second, I claim the combination of the hammer and sectors with the chargers and ramrod (so that I may charge, cock, and fire by simply pulling the trigger), when the whole is constructed, arranged, and made to operate substantially as described,

HAY ELEVATORS—E. M. Rees, of Norristown, Pa. : I do not desire to claim broadly the locking of the frame to and releasing it from an elevating rod, as such a device is described and claimed in the patent granted to T. T. Jarret, May 30, 1854.

Neither do I desire to claim broadly a spring latch for releasing and retaining the frame.

But I claim the plate, G, with its spring bolt, F, and rod, H, in combination with the forked rod, D, with its upper end bent, as described, and its projection, f, when the several parts are constructed and arranged with respect to each other. and to the frame, substantially in the manner set forth.

STEAM VALVE—George Rieseck, of Pittsburgh, Pa. : I claim, first, The valve, D, with a projecting hollow stem, E, which is reduced so that its end presents an area only equal, or nearly so, to the ports, F, F1, F2, G, G1, G2, in combination with a main steam chest or chamber, J, and an auxiliary steam chest or casting, I, furnished with a stuffing box, d, and constructed so as to cover the whole of the back of the valve excepting the end of the stem or a portion of the back equal or nearly equal to the ports in its face, substantially as and for the purposes set forth.

Second, In combination with the above, the peculiar manner specified of making the face of the valve, D, with six ports, F, F1, F2, G, G1, G2, three for receiving and three for exhausting, said ports being arranged in such relation to each other, that when the valve is applied to an oscillating engine, one receiving port always stands in line with an exhaust port, and that only four of the ports shall be in use when the engine is working forward, and the extra two thus kept in reserve, so that the engine may be reversed on shifting the valve, by the pressure of steam from a full open port, as set forth.

SEEDING MACHINES—T. R. Richmond, of Masillon, Ohio : I am aware that perforated seed slides are an old device, and have been used in various ways, but I am not aware that a series of slides have been used in connection with perforated caps and plates, so arranged as to discharge continuous streams of seed. I do not claim separately, therefore, the employment or use of perforated seed slides, but,

I claim the reciprocating slides, I, operated as shown, in combination with the caps, K, and plates, I', the above parts being perforated, and arranged substantially as and for the purpose set forth.

[This invention relates to that class of seeding machines which are designed for sowing seed broadcast, and consists in a novel distributing device, whereby the seed is dropped or discharged from the seed box in a continuous stream, and by a very simple arrangement of means.]

HARROWS—Jeremiah Routh & Abel Vaughn, of Grayville, Ill.: We are aware that various harrows have been devised in which rotary motion has been given to a horizontal harrowing wheel, by means of a vertical toothed wheel upon a horizontal shaft; said vertical wheel being so hung as to take hold of the soil in passing over it, and so geared to the horizontal harrowing wheel as to give it a rotary motion by its own rotation. This we do not claim.

We claim the combination of the vertical toothed wheel, D, with the horizontal toothed wheels, B B, said wheels being connected by gearing as described, by which we secure the necessary rotation, without either side draft or dip of the horizontal wheels, as set forth.

PRINTING PRESSES—C. Edward Sneider, of New York, N. Y.: I claim, first, The revolving double segment frame, with segments balancing each other, in combination with a rocking type bed, T, operated through the segment frames, substantially as described.

Second, I claim the rocking type frame, T, with eccentric ways, W, attached, working over fixed rollers, in the manner and for the purpose described.

Third, I claim the arrangement and the manner of operating the distributing cylinder, E, supported between the segment frames, C, upon the shaft, B, to which the segment frames are attached, said cylinder being made to revolve in the opposite direction to the motion of the shaft, and having at the same time a side motion communicated to the said cylinder for the purpose of distributing the ink upon the inking rollers, as described, in connection with an arrangement of inking rollers, operated in the manner substantially as specified.

Fourth, I claim the arrangement and construction of the fly motion, in the manner and for the purpose as described, operating in connection with the nipper, 8, substantially as specified.

STEAM VALVES—William J. Stevens, of New York, N. Y.: I do not claim, broadly, the use of springs to move valves, and I do not confine myself to the application of my invention to a system of valves like those described.

But I claim the slotted lever, F, the T shaped lever, G, and the spring, K, arranged in relation with each other, and with the piston rod and the valve stem, to operate substantially as set forth.

[This invention consists in a certain arrangement of a spring and levers, for giving a sudden movement to the valves, to change the direction of the induction and eduction of the steam to and from the steam cylinder, as the piston of the engine arrives at the end of its stroke.]

MACHINES FOR POUNDING RICE—John Tallon, of New Orleans, La.: I claim the combination of the pounder, P, arms, S, A, cross-head, C, H, connecting rod, C, R, and crank, C, K, constructed and arranged to operate in relation to each other, as shown and described, and for the purposes set forth.

FOLDING GRIDIRON—Joseph H. Thomas, of Newark, N. J.: I do not claim the invention of double or folding gridirons, but,

I claim the application to a folding gridiron of the hinge joint, formed by the slotted stands, b, b, and the projecting bearings on the ends of the back cross-bar, a, or their equivalents; the jointed handle, e, and slotted standard, f, or their equivalents; the whole forming an adjustable folding gridiron, substantially as described.

CEMENT FOR ROOFING PURPOSES—Joseph Thompson, of North Wrentham, Mass.: I do not claim any mixture of the various kinds of tar and oils, but adapt such materials to the intended use, being governed in choice by the consideration of price, and confine myself to the modification produced in such mixtures by the use of soluble silicates. I call my solid mixed compound, Thompson's Improved Mastic Roofing, and my fabrics, Thompson's Improved Felt.

Neither do I claim the broad ground of a combination of one or more alkaline or earthy silicates, with one or more tarry matters, but,

I claim the composition substantially as described, consisting of an alkaline silicate, oil or oils, coal tar, or pitch of coal tar, and naptha (water being added when necessary), such being for the purpose or purposes set forth.

BILLIARD CUSHIONS—William K. Winant, of Brooklyn, N. Y.: I do not claim a steel facing to a billiard cushion, neither do I claim the attaching said strip or facing to the rubber, by causing said rubber, while melted, to flow against or around said strip of steel; neither do I claim India rubber, or other facing between the steel and the ball, but,

I claim the strip, i, of steel or equivalent material, inserted into the crease or incision in the India rubber cushion, substantially as and for the purposes specified.

I also claim the metallic bearing bar, c, between the back of the India rubber and the cushion rail, substantially as and for the purposes set forth.

VARIABLE BORING BIT—William Tucker, of Gloucester, R. I.: I am aware that it is not new to make a center bit with a tapering or screw center, made adjustable in such manner, with respect to the extreme outer edge of its cutter, as to enable the center bit to be capable of boring holes of different dimensions; therefore I do not claim such, in the abstract, but what I do claim is, the combination of a tapering center point or screw center, d, and an auxiliary cutter, c, arranged on the shank, A. as described, with a main cutter, f, applied to the shank, so as to be capable of being revolved thereon, and fixed in position thereon, by means substantially explained.

REDUCING WOOD FIBRES TO PAPER PULP—Henry Voelter, of Heidenheim, Wurtemburg, Germany. Patented in Wurtemburg August 29th, 1856: I make no claim in this application, as to the originality of invention of using wood pulp for paper making, although it might be shown that this even emanated from me; nor do I claim broadly the employment of mechanical agents, in combination with water or other suitable liquids, for the purpose of separating and obtaining the fibres of wood.

I also disclaim the various parts and mechanical devices constituting my machine when separately considered, and when not combined, as set forth; but I claim,

First, The particular arrangement, construction and combination of the machinery, or the mechanical expedients employed, as herein specified, for reducing blocks of wood, or producing wood pulp, by feeding them up automatically to a rotating grind or millstone, in connection with the peculiar manner of applying or locating said blocks upon the circumference of the stone, or on a portion of its circumference, by holding them behind each other, in a position and direction essentially the same as described and set forth.

Second, The employment and the combination of a series of perforated and rotating cylinders with the reducing expedient, when contracted and connected between themselves, in the manner herein specified, by surrounding troughs and communicating channels or reservoirs, all made to operate as set forth, and for the purpose of assorting the fibres when separated from the wood in the modes described, rendering the pulp fit to be formed into paper of different qualities.

SEEDING MACHINES—S. R. Weldron, of Winnebago Station, Ill.: I claim dividing the hopper, C, into two equal compartments, a, b, and using a slide, F, to graduate the opening, a, between them, when the hopper, thus arranged, is used in combination with the rotating seed distributing wheels, K, flap or back board, G, and the double walls, f, g, all arranged to operate as and for the purpose set forth.

[This is an improvement in broadcast sowing machines, and the intention is to produce a machine in which the quantity of seed to be sown in a given area shall be regulated. It is a very perfect and good device.]

BEEHIVES—Thomas H. Windle, of Wagohtown, Pa.: I am aware that beehives have been made with a moth trap attached, and also with sections of separate bee apartments, arranged together and communicating with each other, and having ventilating holes therein, substantially as described; therefore, I do not claim, broadly, either of these devices, but,

First, I claim the combined arrangement in the moth trap (B) of the tapering moth tubes (11, 11, 11), and the ventilated bee escape tubes (12, 12), when the same are used in combination with the hive, the whole being constructed in the manner and for the purposes set forth and described.

Second, I also claim making each of the larger bee apartments (C) with the self-cleaning slide (4), the said slide being conducted as described, and applied in connection with the tongued piece (7), so as to operate substantially in the manner and for the purpose set forth and described.

MACHINERY FOR FORMING BATS FOR FELTING—Thos. B. Butler, of Norwalk, Conn., assignor to Lounsberry, Bissell & Co., of Norwalk, aforesaid: I do not claim the rolls. J, G, or F, nor any combination of them, nor the vibration of J and G, nor the process of depositing the sliver diagonally upon the roll or apron.

But I claim the arrangement of rows of teeth upon the calendar or felting roll, to hold the sliver while the vibration of the roll, G, is changed, and the angle formed substantially as described.

I also claim the rods, L, springs, M, pins, P, and cams, R, or their equivalents, arranged and operating as described, and for the purposes set forth.

STEAM ENGINES—John J. G. Collins, of Philadelphia, Pa., assignor to himself, William A. Rhodes, and Thos. Drake, of Philadelphia, Pa.: Without claiming broadly the super-heating of steam prior to its admission to the cylinder of a steam engine, I claim combining together for joint action, a cooler, regenerator and steam engine, when the said regenerator is constructed and operated substantially in the manner set forth, and when it is furnished with the devices specified, or any equivalent to the same, by means of which it receives a supply of steam from the coolers, retains until it is superheated, and delivers it to the engine, at intervals regulated by the movements of the latter.

BURNERS FOR VAPOR LAMPS—Frederick Heidrick, of Philadelphia, Pa., assignor to C. F. Clothier, of Philadelphia, aforesaid: I lay no exclusive claim to the hollow burner, F, the spur, H, or to the introduction of the non-conducting material between the tubes, A and B, but,

I claim the employment of the self-adjusting washer, I, in connection with the burner, F, button, G, and wick tube, D, in the manner and for the purpose set forth.

PLOWS—Joseph Jones, of Wilmington, Del., assignor to Edmund Jones and Joseph Jones, Jr., of Wilmington, aforesaid: I claim the combination of the described gear and levers, when constructed and arranged for operation conjointly, in the manner as and for the purposes set forth.

TANNING HIDES—Theodor Klemm, of Pfullingen of Rentlingen, near Stuttgart, Wurtemberg, Germany, assignor to Edmund Moss, of London, England: I do not wish to be understood as limiting my claim to the use of the special composition of matter herein specified, as the said composition of matter may be varied within the range of my invention.

What I claim is, the process of treating and impregnating hides, skins, and other animal tissues, by alternately agitating them in a heated atmosphere or current of heated air, and rubbing or smearing them with the substances specified, substantially as and for the purpose specified.

GAS RETORTS—Alfred Marsh, of Detroit, Mich., assignor to himself, E. Hall Covell, J. Q. Dudley, and Robert Holmes, of Detroit, aforesaid: I do not claim the retort only as in connection with my arrangement, nor do I claim the mode of introducing the gas-making material into the retort as set forth, nor the exit of the gas as decribed, nor the conducting the fumes from a retort by a pipe, only in connection with my arrangement as described; but,

I claim, in the construction of apparatus for the manufacturing of gas from resin or oils, the spiral column resting on feet with the flue through the center; and also the apertures between the threads of the spiral column in combination with the case, in the manner and for the purposes substantially as set forth.

CULTIVATORS—Robert Sawyer, of Wales, Me., assignor to William G. Brown, of Monmouth, Me.: I do not claim the common cultivator, as made with one or more series of small double plow shares, applied to adjustable bars or supports, connected with a plow beam; but,

I claim my improved weeding and hilling plow, constructed substantially as described. viz., with a coulter, B, a root cutter, D, adjustable cutters, G G, and turning shares, L L, applied to adjustable handles, and a plow beam, and made to operate substantially as specified.

COOKING STOVES—John L. Stewart, of Nashville, Tenn., assignor to Randolph A. Nathurst, of Nashville, aforesaid: I do not claim the placing of an oven over the fireplace of a stove, for such an arrangement may seen in many cook stoves, but,

I claim, in connection with the sunken recesses, d, the use of flues or passages, d, e, f, substantially as and for the purposes set forth.

[The object of this invention is to prevent the escape of the products of combustion, smoke, gas, &c., from cook stoves when in use, an object not hitherto attained, on account of the exposure of the fire while cooking vessels were being adjusted in and removed from the holes in the top plates.]

FOLDING PAPER—John North, of Middletown, Conn., assignor to American Book and Paper Folding Company, assignor to Anson Hardy, assignor to Steuben T. Bacon, of Boston, Mass.: I claim placing the sheet direct in register upon the knife to receive its first fold, in the manner and for the purpose above described.

Second, Folding paper by means of a straight edge or knife and reciprocating rollers.

Third, Hanging the frame, m, m, with reciprocating rollers and folding knife, E, attached, to move and reciprocate in the arc of a circle.

Fourth, Causing the rollers to rotate and change their motion alternately, for the purpose specified.

Fifth, Cutting off the inset for the 12-mo folding, at the same time it is being folded.

PREPARING FRAMES FOR GUILDING—James W. Campbell, of New York, N. Y.: I do not claim the lathe, C', for this is a well-known device, and in common use for turning oval and circular frames; but,

I claim the inclined lathe, C, in combination with the inclined tool, F, when said tool is arranged substantially as shown, so as to be rendered capable of being adjusted to the frame, D, by the treadle frame, G, and at the same time allowed a lateral movement or play, to conform to any irregular movement of the frame due to an imperfect centering of the same on the plate, b, of the lathe, for the purpose specified.

RE-ISSUES.

KNIFE POLISHERS—W. H. Horstman, of New-York, N. Y., assignee of Rheuben Shaler, of Madison, Conn. Dated Nov. 28, 1848: I claim the combination of the hopper, B, polishing surface. C, and D, and spring, E, or their equivalents, substantially in the manner and for the purposes set forth.

PRINTING PRESS—Geo. P. Gordon, of New-York, N. Y. Dated Jan 1, 1856: I claim

First, The arrangement and combination of a rotating disc, W, with an annular ring or outside disc, X, the two revolving each in an opposite direction to the other, for the purpose of breaking up the ink, so that it shall by such contrary motions become evenly distributed, and thus imparted to the rollers which ink the form of types.

Second, I claim moving the rollers, T, "one or more being used" for inking the form, from the parallel position they necessarily assume for this purpose, changing to an oblique position which shall give to them a lateral motion, when in contact with the distributing discs, or some equivalent, for the purpose specified.

Third, I claim the arrangement of a form bed, which alternately varies its motion during its reciprocating movement; viz.: first traveling under and in contact with a cylinder to give an impression, then being withdrawn from contact with the cylinder, and remaining withdrawn during the removement, to prevent an impression, such bed reciprocating and at the same time alternating from one of these positions to the other; thus performing two separate and distinct motions, entirely independent of, and in contrary direction to each other, while remaining in gear with the cylinder, when such bed shall be used with a cylinder or its equivalent having a part revolution with a reciprocating movement.

Fourth, I claim attaching to the reciprocating form or type bed, an adjustable rack, as well as a stationary rack, which two racks shall play into gear, upon a cylinder or segment of a cylinder, so that any and all wear or variation, may at once be taken up by adjusting the movable rack, and by this means always cause the bed and cylinder or segment of a cylinder to work in harmony with each other and produce a clear and sharp impression free from slur.

Fifth, I do not claim placing a reciprocating bed in a vertical position, or any given angle from a horizontal position. But I claim so placing the bed when used with a rotating reciprocating cylinder or segment of a cylinder, which shall place or pile the sheets of printed paper upon the fly-board as set forth and described.

TURNING AND SLIDING TABLES FOR RAILROADS—William Sellers, of Philadelphia, Pa. Dated March 23, 1858: I claim interposing the central part or box between the ends of the truss rail beams in such manner as to make use of the width of said central part or box, as a portion of the length of said beams, substantially as described. When the said beams and central box are so constructed and connected, as to form a table entirely supported from the central part or box, substantially as described.

COFFEE POTS.—Charles B. Waite & Joseph W. Sener, of Fredericksburg, Va. Dated April 22, 1856: We do not claim a condensing boiler, but we claim the arrangement described whereby the steam from the boiler is discharged into the water in the condenser, which absorbs the aroma, in combination with the syphon for returning the contents of the condenser into the boiler, substantially as set forth.

SURFACE CONDENSER FOR STEAM ENGINES—J. P. Pirsson, of New York City. Dated April 2, 1850: I claim, first, So enclosing the condensing surfaces of a surface condenser, within a tank which is constructed to be capable of acting as a jet condenser, that when the said surface condenser shall become deranged by breaks or otherwise, resort may be had to the jet condenser, whereby condensation may be continued and the vacuum maintained, substantially as set forth.

Second, The combination of a surface condenser with a box or case, in such manner that the condensation of the steam shall be effected therein, without subjecting the said surface condenser to atmospheric pressure, substantially in the manner described.

Third, The aperture, w, or its equivalent, for maintaining the vacuum, and as a passage for any steam which may remain uncondensed in the radiating condenser, as set forth.

Fourth, Connecting the evaporator with the chamber, h, substantially in the manner described, whereby the saturated water can be drawn off from the bottom of the evaporator.

DESIGNS.

PRINTERS' TYPES—George Bruce, of New York, N. Y.

DOOR LOCK PLATES—Cornelius B. Erwin, of New Britain, Conn. Two cases.

DOOR LOCK PLATES—Henry E. Russell, of New Britain, Conn.

BOX STOVES—N. S. Vedder & Henry Riply, of Troy, N. Y., (aisignor to N. S. Vedder, of Troy, aforesaid).

COOKING STOVES—N. S. Vedder, of Troy, N. Y.

PARLOR STOVES—N. S. Vedder, of Troy, N. Y. Two cases.

Oysters and Star Fish.

The July number of the *North American Review* says, in reference to the havoc made among the oysters by the star fish in the harbor of New York and its vicinity, that the loss has been estimated at many thousands of dollars, and the proprietors of oyster beds have petitioned the State to remit the tax upon them, asserting that unless some way is found to check the ravages of these animals, the oyster is in danger of becoming extinct in many localities where they are now abundant. The ancients believed that the star fish cunningly inserted one of its rays between the valves, and thus gradually destroyed its victim; but modern observation has determined that its mode of attack is very different. If the oyster is a large bivalve (one that would make the mouth of a crustacean epicure water), four or five asteriæ attach themselves to it, and waiting patiently until the mollusk opens his shell, intrude between the valves their stomachs, which first, for a greater convenience, they turn inside out. A liquid is supposed to be secreted by the stomach which acts as an opiate upon the oyster, who no longer possesses the power to close his doors against the intruder, and thus becomes an easy prey to these burglars of the deep. It is to be hoped that the true lover of the delicious oyster, particularly those who are accustomed to study the radiata of the aquarium, will devise some plan to enable the bivalve to retain peaceful possession of his own house until he is forcibly ejected for the benefit of the lords of creation.

VACCINATION.—Too much importance cannot be attached to this great specific against smallpox. In one district in England (so says one of its journals), out of 1,536 deaths 419 have arisen from this terrible disease, a circumstance which requires great and immediate attention; for the large percentage of deaths above alluded to are but a portion which take place in this country annually; and it is to be feared that, if proper means are not taken, the number which is at present so large will soon be increased.

BLACK TONGUE.—A correspondent residing at Howell, Mich., informs us that a disease called the "black tongue" is prevailing in that section, and also that he has noticed that a similar disease is attacking the cattle in the southern States. He says his own experience is that not one in ten of the animals will die if they are permitted to chew coarse salt—the coarser the better. This is a harmless remedy, and should be tried.

A GOOD map of the Submarine Telegraph between America and Europe, well colored, and the *Arctic's* soundings attached, is sold by McKee & Stillwell, 89 Nassau street, New York. Price 10 cents.

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New Inventions.

Friction Matches.

The truth of that trite old maxim "all that glitters is not gold," is exemplified in reference to new inventions in mechanism and science, as well as the other phases of life to which it was originally designed to be applied. The Boston *Herald*, in turning over the pages of of the "Encylopædia of Commerce," just published, remarks that many of the most important things in commerce are likely to be overlooked in the broad, comprehensive, and magnificent examination usually given to such works. In the same manner, inventions of the greatest importance for domestic purposes are frequently overlooked and unnoticed in their homely attire, when placed on exhibition and surrounded by works of polished art, costly machinery, and gorgeous furniture, although of less actual worth and benefit. An humble inventor once placed in such an exhibition a few bunches of friction matches, which were unnoticed by those who passed. Visitors went there looking for some great thing, not realizing that the despised package of splints tipped with chemical fire was the greatest thing in that proud collection, destined to work a revolution in the means of procuring artificial light, and to become a universal necessity, to be deprived of which would be one of the greatest inconvenionces that could happen. It is not more than twenty years since the tinder-box was in universal use; but it is abolished now, and its place taken by this simple, cheap, and certain method of obtaining light. The introduction of friction matches spread slowly; but who now would like to do without them? Rafts of timber are annually cut up for this purpose.

New Gas Apparatus.

Small towns, factories, villages, hotels and dwellings are much in want of the cheap and cleanly light that gas affords, and any arrangement of parts which shall place within the reach of such places a simple and convenient apparatus for making gas from any substance is a public boon.

Our engravings illustrate one of these, by which gas can be made from any material —coal, resin, tar, oil, wood, old grease, or, in fact, any of those organic substances that contain sufficient proportions of hydrogen and carbon to form, under the influence of heat, an illuminating gas.

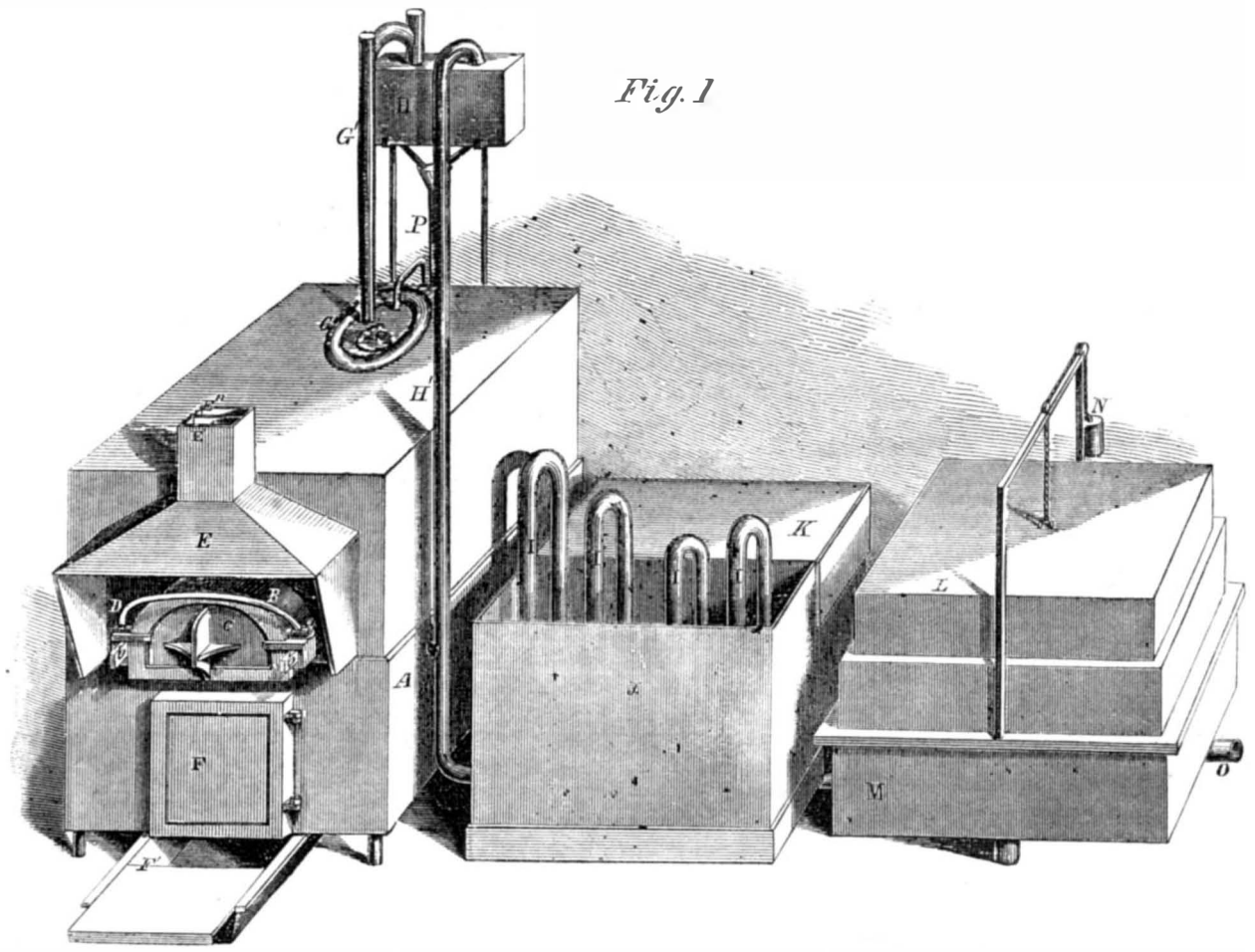
Fig. 1 is a perspective view of the whole arrangement, which we will first describe. A is the furnace, in which is the retort, B, the door of which, C, is secured by means of the iron loop, D, that moves upon pivots, *a*, the door fitting by slots on the projections, *b*. E is a hood which conveys off the fumes or gas when the door is open by one passage of its chimney, E′, and forms the chimney of the fire by its other passage, E″, through which the smoke and other products of combustion pass from the fire. F is the door of the grate, and F′ is the ashpit containing water. G is another retort door or covering plate, from which the gas passes up the pipe, G′, into the hydraulic main, H, from thence through the pipe, H′, into the condensers, I, that are placed in the cooler, J, and from thence the gas passes through the lime purifier, *k*, which is in the same box, J. The gas, after having been thoroughly dried and purified, now passes into the square gasholder, L, that is in the tank, M, balanced by the chain and weight, N, and from that through the service main, O, to the burners where it is consumed all tar and fatty matter that is condensed in the hydraulic main, passing back through P into the retort to be again decomposed into gas. The compactness of this arrangement will be seen at once, and its consequent adaptation to such places where only a comparatively small quantity of gas is wanted will be at once appreciated.

Fig. 2 is a section of the various parts, also showing a different arrangement of the several portions of the apparatus. The same parts are indicated by similar letters in each engraving.

The retort, as it will be seen, is double, having a false or temporary bottom of perforated plate, which, when coal gas is to be made can be removed, but for any other gas it can remain. Coke or pumice must be piled on this, and if the substance from which the gas is to be made be one which first becomes liquid, the process is as follows:—If it be thrown in through the door, C, in the solid form, it is first liquified and drops through the coke or pumice on to the base of the retort, there it is converted into vapor, and the vapor ascending through the heated pumice or coke becomes converted into permanent gas. If it be converted into liquid by the waste heat of the furnace before it enters the retort, then it can be fed through a pipe inserted in the back door of the retort. G. Coal or wood will, of course, have to be fed in the ordinary way, but the beauty of this retort is that when any liquid is used, there is no occasion to open the retort from the commencement to the end of the process. The gas being made passes through a series of lime trays, *c*, in the supplemental part of the retort, B′, which de-

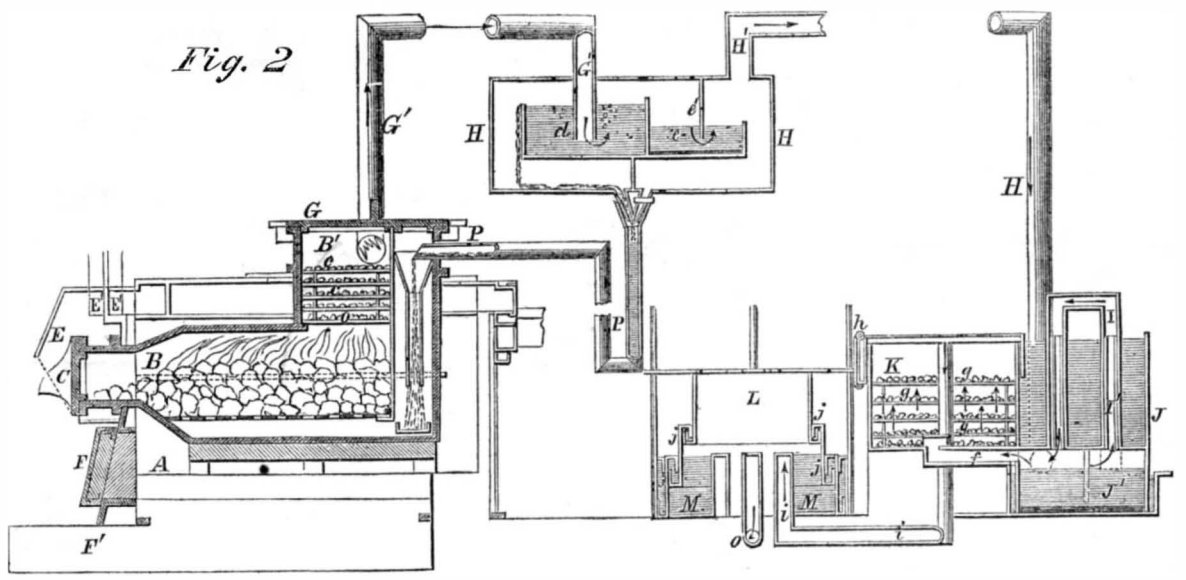
HOCK'S IMPROVED GAS APPARATUS.

Fig. 1



prive it of much sulphur, and other impurities. Then passing up the pipe, G′, it arrives at the box which represents the hydraulic main. In our illustration this has been turned one quarter round, so as to show the internal arrangement of its parts. The gas passes through the small box, *d*, becoming cooled and leaving behind, it its tar until there is enough to fill it, then it bubbles through each globule, leaving some tarry matter which flows over the box, and down through P into the retort at the back, as represented in Fig. 2, or through the lid, G, as represented in Fig. 1. The gas then passes through the water, *e*, leaving more tar, and under the partition, *e′*, into the pipe, H′. From this it passes down into the condensers I, placed in a tank of water, J. These condensing tubes are made to slide up and down, so that they can be elongated or shortened to suit the quantity and quality of the gas passing through them; all the tar and tarry water that may remain in the gas will now be separated because of its coolness, and will drop into the chamber, J′, from which it can be pumped away. The pipe, *f*, now conducts the cool and mechanically clean gas into the dry lime purifier, K, when

Fig. 2



it passes up through trays of pure lime and leaves behind it ammonia and sulphureted hydrogen. To this a pressure gage, *h*, can be attached. By the pipe, *i*, the gas is now conducted into the holder, L. This holder has a very shallow tank, M, no well being required, and it is in three parts, each connected by perfect water joint, *j*, through which no gas can escape, and a very equable pressure can be kept on the gas to send it through the service main, O. This simple apparatus is now in operation in several towns, and as a convenient form of small gas works it is among the best.

The inventor is John G. Hock, of Newark, N. J., and he has two patents on the apparatus, one on the retort dated May 20, 1856, and the other on the arrangement dated March 30, 1858. For State or county rights or further information concerning the invention, address the inventor as above. Mr. Hock would also like to dispose of his English and French patents, which were secured through the Scientific American Patent Agency in 1856.

Adjustable Car Seats.

We have seen a model of J. B. Creighton's method of adjusting car seats, so that they may be used as beds when desired. The device is quite simple and apparently good. Patented May 18, 1858. We may illustrate it in a future number.

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Scientific American.

NEW YORK, AUGUST 21, 1858.

Railroads—Their Management and Mismanagement.

It is supposed that there have been one thousand millions of dollars expended on railroads in the United States; but there yet remains to be written a startling history of the duplicity, fraud and incompetence which have attended their construction and management, and the formation of the companies which have led to the ruin of many who have embarked in them. The main body of these roads were projected by the most worthy of our citizens, through an ennobling spirit of enterprise, and with a view to develop the resources of the country, benefit their fellow-eings, and obtain a legitimate return for capital thus boldly and creditably invested. Others, however, were recklessly started by worthless persons, for the exclusive purpose of enriching themselves at the expense of a cheated and plundered community. In the case of many of these roads not the least possible chance existed for gaining profit to the stockholders, owing to the lack of available business, still they were drawn into the most extravagant expenditures, by having the names of individuals in whom they had confidence paraded before them as directors and heavy shareholders. A heavy responsibility rests upon these persons, who, under the false pretence of affording to the limited capitalist an adequate return for his or her investment, have ruthlessly swindled them of what may have occupied years of honest industry to accumulate. If the course of such persons deserves the condemnation of all just men, the individuals under whose charge the profits of manifestly good paying roads have been subverted from their legitimate channels by mismanagement, or as a cotemporary more justly terms it, dishonesty, are no less deserving of reprobation and punishment.

Long before the frauds of Schuyler and his more recent brothers in crime were perpetrated, we were satisfied that there was something radically wrong in our railroad system. We thought then, and later developments have only confirmed our belief, that too much power was vested in a few leading men, without the periodical application of the healthy checks afforded by a general investigation of their administration by the stockholders. If the power of the directors were limited to what is absolutely necessary to the government of the concerns of the company, and they were required to give bonds for honest conduct and frequent reports of their stewardship, and often changed, we believe that the evils arising from the present incompetency and systematic plunder of the stockholders would cease. If the stockholders are numerous and scattered, and many of them are women and children, they still have the power and skill, if they will but exercise it through others, to protect themselves. Let them elect men whom they know, and constantly apply the healthy principle of rotation in office. Let them arrange among themselves a system that will cause the state of the concerns of the company to be periodically laid before them, and determine to be as well posted up in its details as they are in the more immediate business affairs of life. Prevent the directors from buying and selling stock when they have thus the power of depression or inflation in their hands. This is the only method of preventing false dividends being declared, and the interests intrusted to them from being subverted to their own personal and selfish ends.

Under the present arrangement, the public, including the shareholders, are studiously kept in the dark as to the state of the affairs of railroad companies, and hence when the crash and crisis comes which the dishonesty and mismanagement of the directors have brought about, the latter are in a position to see danger first, and by concealing it dispose of their shares, and leave the unsuspecting stockholders and creditors to be overwhelmed by the ruin. Just so long as stockholders allow the affairs of railroad companies to be under the unrestricted control of a dozen sharp and selfish directors will the evils which clog their management exist. We believe with a cotemporary that incompetency and dishonesty constitute the bane of our railroad system. Its whole management is essentially vicious and corrupt. A few large fish, having thousands of small ones in their power, as a matter of course devour them.

We are sorry to feel compelled to send abroad a statement like this, but the sooner foreign capitalists learn that there is neither safety nor honesty in the general management of the railroads of this country, the better it will be for them. There are, we are happy to say, good exceptions to these severe charges, but they are few.

The Great Eastern.

The projectors of the Great Eastern Steamship Company having failed in their efforts to raise the amount (upwards of a million of dollars), to complete this monster, suggest two alternatives, the first being to raise the necessary amount of capital by an issue of preference shares, and the second to promote the formation of a new company, to whom the ship may be sold to pay the debts (amounting to upwards of $320,000), now pressing upon her, and to raise the additional sum to fit her for sea. The New York *Evening Post* asserts that in the present discouraging state of the shipping trade, she would, if finished, have to wait six months at Liverpool to fill up, and still longer at her place of destination to discharge and reload. Shippers would not wait the slow movements of such an ark, when they could send conveniently, and on as favorable terms, every week by the smaller liners. Suspicions of this kind have been gradually forcing themselves upon the minds of the stockholders, we presume, indisposing them to risk any more good money after bad. Hence their refusal to come forward and make up the funds necessary to finish the work so bravely begun, or even protect the credit of the company.

When this grand conception of mechanical genius was first commenced, the enthusiasts of the press, both in this country and England, asserted, as they have of many other gigantic enterprises, that her completion would inaugurate a system that must benefit every man, woman and child in the universe and produce a revolution in ship-building. How lame and impotent is the conclusion! After years spent in her construction; after expending we know not how much in building her hull; after exhausting the mechanical science of the world in launching her; and after keeping the world vexed for we know now how long, with the questions where she was to run to, and what harbor was big enough to hold her, it turns out at last that this ship, which was to be to other ships what the Grand Man in the New Church theology is to other men, has exhausted the funds and credit of the company, and that her owners are heartily sorry that they did not apply their capital to some other object more remunerative than she is likely to prove.

NEW OVERSHOE.—It is stated that a citizen of Utica, N. Y., has invented a new kind of overshoe, designed for persons traveling by sea and land. It is made of braided straw. Straw being a non-conductor of heat, the natural warmth of the foot is retained, without being subject to dampness by the foot sweating—an advantage of great importance—the straw being porous, and either absorbing the dampness or allowing it to pass off.

THE TELEGRAPH PLATEAU.—Our readers will find a map of this, and the connections of the Atlantic Cable in Europe and America, together with much interesting matter appertaining thereto, on page 216, Vol. XII, SCIENTIFIC AMERICAN.

The Inventor of the Electric Telegraph.

A correspondent is out in the *New York Times* of the 9th inst., claiming that "it cannot be refuted that Dr. C. T. Jackson, of Boston, is the first inventor of the electric telegraph." He refers to the fact that Dr. Jackson and Professor Morse were together on board the packet ship *Sully*, from Havre to New York, in the summer of 1837. On his leaving Paris, Dr. Jackson purchased the little galvanic battery, with its apparatus, still kept in his possession in Boston, which may in some future day become a great curiosity, as being the very little magneticinstrument that has been the means of all the subsequent and wonderful events of the magnetic telegraph above and below land and sea. Upon this voyage he alleges that it is well-known to many that Dr. Jackson conducted experiments on the deck of the vessel before all the passengers, and "in his usual open, frank manner explained everything about it and its uses for telegraphic communication."

It strikes us as very singular that in the midst of all the testimony that has been eliminated to prove that Professor Morse was not the original inventor of the electric telegraph, that so important a witness as Dr. Jackson should have been left alone. It is equally singular that Dr. Jackson himself should have so long concealed his just claims, if he ever had any, to this important discovery. Where are *all* the passengers who saw these deck experiments? Surely there is something strange about the case, and we should advise Dr. Jackson to keep watch of his zealous friend who thus lays claim in his favor to this great discovery. It will be as difficult now to convince the American people that Professor Morse's claims to the electric telegraph are not valid, as it is to make them believe that General Washington played "second fiddle" to Alexander Hamilton, as the son of the latter endeavors to prove.

Great Steam Plowing Match.

At the recent show of the Royal Agricultural Society, held at Chester, England, on the 14th ult., five steam plows contested for the handsome prize of £500 ($2,425). Four of the plows were operated by steam engines fixed on the field and moving the "shares" back and forth by ropes and windlasses. The fifth plow (Boydells') had a traction engine which moved over the field. Each of these turned over four furrows at once, and the work was well done by them, all but one, which broke down. The soil was a hard, dry stiff clay. Furrows of nine inches depth were turned over, and the competition was very spirited. The successful plow was Fowler's; it executed one and three-quarters of an acre in two hours. By offering high prizes for steam plows by our agricultural societies, positive success would soon be achieved.

Charles F. Mann, of Troy, N. Y., has recently put in operation a steam plow, which we have heard well spoken of by those who have seen it work.

A French Flying Machine.

A Paris correspondent says that the Emperor Napoleon has just made a present of 5,000f. to a private in the Line, who asserts he has discovered a solution for the great problem in æronautics—the art of flying. He has invented a kind of air ship, consisting of a platform of silk stretched over whalebone, to be propelled by two gigantic wings of the same material, placed on each side. The aerial navigator is to be suspended at a distance of about four feet from the platform, while his feet rest on pedals, by means of which the wings are set in motion, while his arms rest on a lever, which imparts to the platform the direction he chooses to give it. Only a model of this machine has yet been constructed, and it appears to work well. Thanks to the Emperor's munificence, it is now about to be constructed on a large scale. This is another evidence of the liberality of the extraordinary man now at the head of affairs in France, toward the progress of science and the mechanic arts. It was he who took the initiative step in making a European remuneration to our own Professor Morse for his service in bringing the magnetic telegraph from the region of speculative science into practical application, and throughout his career he has shown marked favors to all inventors who have in any manner benefited mankind by the results of their genius. The Emperor, it is true, often lends his aid to chimerical ideas, but for the principle which dictates the course he invariably pursues toward distinguished originators in the arts and sciences, he deserves the unqualified praise and approval of all right-minded men.

Do Animals Reason?

One pleasant day last summer, says a correspondent of the Boston *Post*, a small party embarked in a wherry to visit Russ's Island. In the boat was a Newfoundland dog. As soon as we had disembarked, the dog observed at a short distance about a dozen cows and an old lame horse feeding, and accordingly rushed towards them barking at the top of his voice. This attack first startled the cows, and they began to retreat with considerable speed. The horse was selected as the main object of his assault, and limped away as well as he could. The cows huddled together in a group, and passed around among each other for a few minutes, apparently consulting on what was best to be done. Finally they came forward in a body, covered the retreat of the old horse, and took the van themselves. They then moved deliberately together in a line, with heads toward the ground and horns presented to the dog, and drove him back defeated. At every succeeding rally on his part, they continued to repulse him until he abandoned his attacks, and then retired to a grassy spot to graze as before. These cows actually protected their lame associate from the assaults of the noisy invader.

State Fairs.

The following State Fairs are to be held during the present year:—

Alabama, at Montgomery, Oct. 18 to 22.
Connecticut, at Hartford, Oct. 12 to 15.
Illinois, at Centralia, Sept. 14 to 18.
Indiana, at Indianopolis, Oct. 4 to 9.
Iowa, at Oscaloosa, Sept. 28 to Oct. 1.
Kentucky, at Louisville, Sept. 27 to Oct. 1.
Missouri, at St. Louis, Sept. 6 to 16.
New Hampshire, at Dover, Oct. 6 to 8.
New Jersey, at Trenton, Sept. 15 to 17.
New York, at Syracuse, Oct. 5 to 8.
Ohio, at Sundusky, Sept. 14 to 17.
Rhode Island, at Providence, Sept. 15 to 18.
Vermont, at Burlington, Sept. 14 to 17.
Wisconsin, at Madison, Oct. 4 to 7.
Maine, at Augusta, Sept. 21 to 24.
Pennsylvania, Pittsburg, Sept. 28 to Oct. 1.
Maryland, at Baltimore, Oct. 19 to 23.
Michigan, at Detroit, Sept. 28 to Oct. 1.
North Carolina, at Raleigh, Nov. 2 to 6.
South Carolina, at Columbia, Nov. 9 to 12.
Virginia, at Pittsburg, Nov. 2 to 5.
Do., Northwestern, at Wheeling, Sept. 14 to 16.
United States, at Richmond, Oct 25 to 30.

CANADIAN FAIRS.

Canada East, Montreal, Sept. 29 to Oct 1.
Canada West, Toronto, Sept. 28 to Oct. 1.

The Ocean Telegraph Cable.

The whole population of our city has been thrown into tremendous excitement, by the reception of the Queen's message through the Atlantic telegraph cable. The grand problem has thus at length been solved, and all seem gratified and delighted at the success of the great enterprise. The Queen congratulated the President upon the success of this wonderful international work, and the President sends a suitable reply. We shall give both messages in our next issue.

Numbers 51 and 52.

Only two more numbers to be issued, and the curtain drops upon Volume XIII. of the SCIENTIFIC AMERICAN. All subscriptions that began with this volume will end with No. 52, and in accordance with our usual custom, the paper *will be stopped* unless they are renewed.

Friends, send in your subscriptions with as little delay as possible. Get some of your neighbors to join with you, and thus avail yourselves of our liberal clubbing rates.

EXHIBITORS OF MACHINES are invited to notice the advertisement of the Mechanic's Institute of Chicago on another page.

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THE ATLANTIC CABLE.

The general enthusiasm of the people of this country and, we doubt, not of Great Britain also, which has been developed by the success attending the labors of the great enterprise, renders every piece of intelligence, no matter how meager, acceptable and of interest, and therefore we surrender a great amount of space to the all-absorbing topic. The daily and other newspapers have literally been crowded with Atlantic Cable news, and it is our intention to give our readers, as far as possible, the pith of these lengthy accounts and statements.

During the whole voyage Mr. Field kept a diary, which he has kindly laid open for the use of the press, and from it we shall make some extracts :—

"*Saturday, July* 17.—This morning the telegraph fleet sailed from Queenstown, Ireland, as follows: The Valorous and Gorgon at 11 A. M., the Niagara at 7 30 P. M., and the Agamemnon a few hours later. All the steamers are to use coal as little as possible in getting to the rendezvous. Up to 5 P. M. clear weather and blue sky ; from 5 to 9 P. M. overcast, threatening weather, and drizzling rain; from 9 to 12 P. M., overcast, hazy and squally.

Thursday, July 29.—Lat. 52° 59′ N., Lon. 32° 27′ W. Telegraph fleet all in sight; sea smooth; light wind from S. E. to S. S. E.; cloudy. Splice made in the cable at 1 P. M.; signals through the whole length of the cable on board both ships perfectly; depth of water, 1,550 fathoms.

Distance to the entrance of Valentia harbor, 813 nautical miles, and from there to the telegraph house the shore end of the cable is laid.

Distance from the entrance of Trinity Bay, N. F., 822 nautical miles, and from there to the telegraph house at the head of the Bay of Bull's Arm, 60 miles, making in all 882 nautical miles.

The Niagara has 69 miles further to run than the Agamemnon.

The Niagara and Agamemnon have each 1,100 nautical miles of cable on board; about the same quantity as last year.

At 7 45 P. M. ship's time, or 10 5 P. M. Greenwich time, signals from the Agamemnon ceased, and the tests applied by the electricians showed that there was a want of continuity on the cable, but that the insulation was perfect. Kept on paying out from the Niagara very slowly, and was constantly applying all kinds of electrical tests until 6 P. M., ship's time, and 11 30 P. M., Greenwich time, when we again commenced receiving perfect signals from the Agamemnon.

Thursday, Aug. 5.—At 1 45 A. M., the Niagara anchored. Distance run since noon yesterday, 64 miles. Amount of cable payed out, 66 miles 353 fathoms, being a loss of less than 4 per cent.

Total amount of cable payed out since the splice was made, 1,016 miles 600 fathoms. Total amount of distance run, 882 miles. Total amount of cable payed out over the distance ran, 134 miles and 600 fathoms, being a surplus of about 15 per cent.

At 2 A. M. went ashore in a small boat and informed the persons in charge of the telegraph house—half a mile from the landing—that the telegraph fleet had arrived, and were ready to land the end of the cable.

At 2 45 A. M. received a signal from the Agamemnon that she had payed out 1,010 miles of the cable.

At 5 15 A. M. the telegraph cable was landed. At 6 A. M. the shore end of the cable was carried into the telegraph house, and a strong current of electricity received through the whole cable from the other side of the Atlantic. Captain Hudson then read prayers, and made some remarks.

At 1 P. M. the steamer Gorgon fired a royal salute of twenty-one guns, and all the day was discharging the cargo belonging to the Telegraph Company.

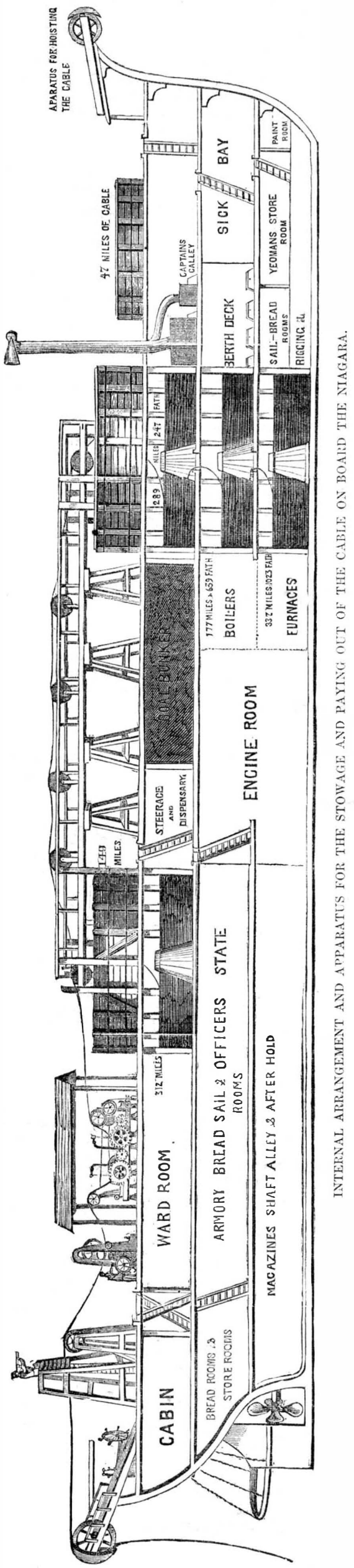
Friday, Aug. 6.—Have been receiving all day strong electric signals from the telegraph house in Valentia.

NOTE. — We landed here in the woods. Until the telegraphic instruments are all ready and perfectly adjusted, communications cannot pass between the two continents, but electric currents are received freely. You shall have the earliest intimation when all is ready, but it may be some days before everything is perfected. The first telegraphic message from Europe to America will be from the Queen of England to the President of the United States, and the second the reply.

C. W. FIELD."

This is a singularly interesting paper, and should be preserved as an important international document, for it is the record of a union of the two countries, and as we trust, more powerful and lasting than any treaty ever devised by statesmen. The enterprise has called forth many gems of thought from great men, the best of which is the allusion to it by the Hon. Edward Everett in his oration at the opening of the Dudley Observatory, where, with an eloquence that epitomized the wonder of this modern miracle, he said :—

"I hold in my hand a portion of the identical electrical cable, given me by my friend, Mr. Peabody, which is now (April 22, 1857) in progress of manufacture, to connect America and Europe. I read upon it the following words: 'A part of the submarine electric telegraph cable, manufactured by Messrs. Glass & Co., of London, for the Atlantic Telegraph Company, to connect St. John's Newfoundland, with Valentia, Ireland, a distance of sixteen hundred and forty nautical, or nineteen hundred statute miles.' Does it not seem all but incredible to you that intelligence should travel for two thousand miles, along those slender copper wires, far down in the all but fathomless Atlantic never before penetrated by aught pertaining to humanity, save when some foundering vessel has plunged with her hapless company to the eternal silence and darkness of the abyss? Does it not seem, I say, all but a miracle of art, that the thoughts of living men—the thoughts that we think up here on the earth's surface in the cheerful light of day—about the markets, and the exchanges, and the seasons, and the elections, and the treaties, and the wars, and all the fond nothings of daily life, should clothe themselves with elemental sparks, and shoot with fiery speed in a moment, in the twinkling of an eye, from hemisphere to hemisphere, far down among the uncouth monsters that wallow in the nether seas, along the wreck-paved floor, through the oozy dungeons of the rayless deep;—that the last intelligence of the crops, whose dancing tassels will in a few months be coquetting with the west wind on these boundless prairies, should go flashing along the slimy decks of old sunken galleons, which have been rotting for ages;—that messages of friendship and love, from warm living bosoms, should burn over the cold green bones of men and women whose hearts, once as warm as ours, burst as the eternal gulfs closed and roared over them, centuries ago."



INTERNAL ARRANGEMENT AND APPARATUS FOR THE STOWAGE AND PAYING OUT OF THE CABLE ON BOARD THE NIAGARA.

This brings us now to the history of the enterprise. The commercial men were astonished one morning by the appearance in the newspapers of the annexed card, which was the first issued by what is now the Atlantic Telegraph Company :—

NEW YORK, NEWFOUNDLAND AND LONDON TELEGRAPH COMPANY.

DIRECTORS IN NEW YORK.

Peter Cooper. Cyrus W. Field.
Moses Taylor. Marshall O. Roberts.
Chandler White.

Peter Cooper,	President.
S. F. B. Morse,	Vice President.
Moses Taylor,	Treasurer.
Chandler White,	Secretary.
David Dudley Field, Esq.,	Counsel.
E. N. Gisborne,	Engineer.

In 1856 Cyrus W. Field visited England, and obtained a capital of $1,750,000, with which they at once set to work; and after due consultation as to the route, construction of the cable, &c., they ordered its manufacture. Both governments promised assistance, and Lieut. Maury announced in a report the existence of a plateau across the Atlantic, on which it could be laid. This was subsequently confirmed by Lieut. Berryman, who sounded the whole distance in the Arctic. The Boston *Journal* gives a perfect condensation of the failures that have thus far attended this enterprise, which we give *in extenso* :—

"In August, 1857, an attempt was made to lay down the Atlantic Submarine Cable, resulting in a disastrous failure. The cable was 2,500 miles in length, weighing nearly one tun per mile, capable of bearing a direct strain of over five tuns without fracture. The center of the cable was formed by seven fine copper wires, twisted into a cord one-sixth of an inch thick. This strand was coated with gutta percha, forming a small rope of $\frac{3}{8}$ of an inch thick; then coated with hempen twine twice soaked in pitch and tar; lastly, an external sheathing of 18 iron wires, each wire being a strand of seven finer wires, making in all 126 wires.

The submersion was commenced on the 5th of August, 1857. There were present the six steamers, Niagara, Agamemnon, Leopold, Susquehanna, Willing, and Mind, intended to assist in various parts of the operation. The cable came up from the hold of the ship, around a central block, so to the open space above decks; it was there wound round grooved sheaths, geared together by cogs and firmly planted on girders. Thence it passed over a fifth sheath, out over the stern into the sea, sinking by its own weight. A trifling accident happened on the 6th; this was repaired, and on the 11th, 380 miles (statute) had been submerged. The engineer here concluded that there was too much "slack" in the cable's course, and some modification in the machinery was consequently made. This appears to have been badly attended to by a subordinate. The cable snapped, and thus ended the attempt of 1857.

It having been concluded from some good observations that the average state of the weather was much better on the Atlantic in the early part of summer, it was decided this year to attempt laying the cable in June, It was also thought best to begin the submersion in mid-ocean, and pay out toward either shore. Accordingly the telegraph fleet, consisting of the United States steam frigate Niagara and Her Majesty's steamers Agamemnon, Valorous and Gorgon, left Plymouth on Thursday, June 10, 1858. The Niagara had 850 tuns, and the Agamemnon 450 tuns coal, and each about 1,100 nautical, or somewhere about 1,500 statute miles of cable on board. The weather at first favor-

CONCLUDED ON PAGE 400.

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Correspondents

S. N. D., of N.—You are correct in regard to the convenience of drawing up water in buckets with hinged valves in their bottoms, to open and close by the pressure of the water. But you do not seem to be aware that such buckets are old and well-known.

"A Correspondent" sends us a sketch of a brick machine from Paducah, Ky., but fails to sign his name to his letter. If he will supply this omission we will answer him by mail.

G. B. D., of Tenn.—We think that "Moseley's Mechanics applied to the Arts," and "Dr. Lardner on the Steam Engine," would suit you. Both can be procured from Wiley & Halstead, this city. The other books are hard and dry.

R. H. L., of Wis.—The best battery for galvanizing purposes is Smee's. You can drill glass with diamond dust and a steel drill.

P. C., of Mass.—Providing funnels with a vent tube at their sides to admit the escape of air or gas from vessels into which liquids are being poured is not new or patentable.

John C. Elder, of Baton Rouge, La., wishes to purchase a spoke-turning machine.

F. A. F., of Mass.—We think that you could obtain amianthus at the store of any large philosophical instrument maker.

W. H. G., of Mass.—The water of the ocean increases in density as you descend and so does anything thrown into it; so the relative density remains the same, and a cannon ball would sink to the bottom.

M. M. K., of Texas.—You propose to employ a number of springs tangent to the circumference of the wheel for the alleged purpose of preventing the jolting of carriages. It is entirely impracticable to undertake such a system. It might do very well for a toy, but it would never do for loaded vehicles.

C. H. N., of Pa.—Robert L. Pell is President of the America Institute. A letter addressed to the care of the Institute would reach him safely. He has paid much attention to the artificial propagation of fish, and is no doubt capable of giving you sound and useful advice on this subject.

F. F. A., of Pa.—In volume X. of the SCIENTIFIC AMERICAN, we published a history of reaping and mowing machines, and if you refer to it you will find several modifications of the circular cutter. A recent patent by Stephen R. Hunter, of Cortlandt, N. Y., also employs a series of circular cutters.

M. A. W., of Ct.—We have examined a sketch and rough description of your plan for preventing the escaping sparks, &c., from locomotives from coming in contact with houses in the sides of the streets through which they travel, and so far as novelty is concerned we believe it to contain sufficient to form a patentable claim. The objection to locomotives passing through inhabited streets is not confined to smoke, sparks, &c., escaping from them, but mainly applies to the danger to life, and the disagreeable noises and other inconveniencies they produce.

J. C. R., of Va.—The alkali will not injure the hide at all, and if you will put about two bushels of wood ashes into your lime with half the quantity of lime usually employed, you will make a much handsomer leather and more durable, with less handling.

Z. Y. X., of Pa.—Professor Rodgers only meant that the stalactites which he had in that particular instance increased at the rate of one-tenth of an inch a year, but they may increase at a greater rate in different localities and under different circumstances.

R. M., of Ind.—In Vol. IX., SCI. AM., you will find an engraving of the weighing and packing machine of N. B. Harris & Co., of Philadelphia.

W. M. P., of C. W.—We should think common glue the best thing you could use to attach paper labels.

G. S. P., of Ill.—The idea of obtaining motive power by atmospheric pressure is an old one. The same power you apply to the air pumps to produce the vacuum would be more advantageously employed, if applied directly to work the engine, as the friction of the air pump causes an additional loss of power, and besides this, many other objections to your method might be stated.

E. C., of Ohio.—To cut files with a diamond is not patentable.

C. F. A., of Boston.—We cannot name such a work as you want. Inquire of some botanic physician in your city.

T. E. M., of R. I.—A patent cannot be obtained for a ship's rudder having the spindle passing through the center of two blades instead of having the spindle at one side of a single blade as is the common custom.

A. F., of Me.—We cannot inform you how to prepare the ergot or spurred rye, which has been recommended for consumptive patients. Physicians ought to be the best judges on these matters.

Money received at the Scientific American Office on account of Patent Office business, for the week ending Saturday, August 14, 1858:—

K. & B., of N. Y., $150; M. H. R., of Tenn., $30; J. W., of Ind., $30: E. L. L., of N. Y., $25; F. R., of Mass., $30; D. R. K., of Conn., $30; J. A., of Pa., $25; W. M., of N. Y., $30; A. H., of N. Y., $25; W. & J., of Conn, $30; J. C McD., of Ohio, $25: J. C. DeW., of N. J., $25; J. L., of Ind., $10; L. H. M., of R. I., $30: C. P. P., of S. C., $30; G. F. and M. J., of N. Y., $60: J. C., of N. Y., $30; R. M. T., of Mich., $25; G. H. W., of N. Y., $55; W W., of Ct., $35 L. & D., of N. Y., $25; A. W., of N. Y., $70; W. P., of Del., $25.; J. F. B., of Ill., $30; C. D. M., of R. I., $30; T. S. B., of N. Y., $12; S. & E., of Ill., $30; J. V., of Ill., $30; F. Y., of Ky., $30; W. P. A., of N. Y., $40: B. T. S., of Ill., $55.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, August 14, 1858:—

H. & P., of Conn.: G. P. P., of R. I; J. C. D., of N. J: A. H., of N. Y.; J. A.K., of Mo.; W. W., of Conn.; A. W., of N. Y.; J. D. M., of Mass.; T. S. B., of N. Y.; J. W. N., of Conn.; R. M. T., of Mich.; W. P. A., of N. Y.; J. C. McD., of Ohio; I. H. T., of N. Y.; B. & H., of Mass.; G. H. W., of N. Y.; W. P., of Del.; L. & D., of N. Y.; E. L. L., of N. Y.

Literary Notices.

THE NEW AMERICAN CYCLOPÆDIA—Volume III.—Beam—Browning. D. Appleton & Co., 346 and 348 Broadway, New York. Edited by George Ripley and Charles A. Dana. In the gradual progress of this work the authors of the several articles seem more thoroughly to enter into the proper encyclopœdia spirit—condensation; and have wonderfully succeeded in placing in a small space a great accumulation of facts. In such a work there is no room for comment or decoration, and all that is wanted is, that under every head or subject, there will be found all the facts connected with that subject stated simply and without bias. The writer should forget his individuality and style, and become the simple recorder of events and observations. Looking at this work from an utilitarian point of view, we think that Messrs. Appleton should be highly commended for issuing parts at 25 cents, so that it will be in the power of every one to obtain it, and will enable every farmer and mechanic to have upon their shelves a condensed library of information that will be a lasting honor to the editors and a credit to the country.

NORTH CAROLINA UNIVERSITY MAGAZINE for August, published by J. M. Henderson, Chapel Hill, N. C. This interesting magazine, which certainly does credit to the young students brains of North Carolina, contains a very good essay on the "Life and Character of Samuel Johnston," and a lively little sketch informing the reader "How Zibes got Kicked," together with many other articles of interest and merit.

THIRTIETH ANNUAL FAIR OF THE AMERICAN INSTITUTE at the Crystal Palace, in the city of New York.—The Managers announce that the Exhibition will be opened on Wednesday, the 15th day of September next. The Palace will be prepared for the reception of goods on and after the 7th of Sept. Machinery and heavy articles will be received and stored after the 1st of July. This exhibition is intended to embrace Machinery and New Inventions, Manufactures of all descriptions, and Agricultural and Horticultural Productions of every kind. Gold, silver and bronze medals, silver cups, and diplomas will be awarded on the report of competent and impartial judges. The Managers would impress upon exhibitors the importance of making early application for the space they wish to occupy. Circulars containing full particulars can be had by applying to WM. B. LEONARD, Corresponding Secretary of the Institute, No. 351 Broadway, New York, to whom all communications should be addressed. By order of the Managers,
F. W. GEISSENHAINER, JR., Chairman.
JOHN W. CHAMBERS, Secretary.

GRANULAR FUEL IS THE GROWTH of swamp lands and the trimmings of trees cut into lengths adapted for kindling purposes or summer fuel—about four inches. This article is prefered to charcoal or split wood for kindling coal fires, no shavings being required. An inexhaustible supply of material can be had within convenient distance of all our cities and towns, as it repeats its growth once in three years. With Daniels' Patent Fuel Cutter and 1-horse power, one man can cut 600 bushels per day; seasoned hickory three inches in diameter is cut with it. Upwards of forty machines are now in successful operation in Massachusetts. Granular Fuel brings the same price as charcoal, and costs but three cents a bushel. A right with machine, costing $500, insures an income of $1,500 per annum. Send for circular containing references, &c., to B. D. WASHBURN, Taunton, Mass., General Agent.

GUILD & GARRISON'S STEAM PUMPS for all kinds of independent steam pumping, for sale at 55 and 57 First street, Williamsburgh, L. I., and 301 Pearl street, New York.
GUILD, GARRISON & CO.

EXCELSIOR BOLT CUTTERS—WE CAN confidently recommend these excellent machines, believing they are the most durable and effective screw cutters yet invented. They cut a smooth and firm V-thread on bolts and rods of any length at one cut, and no back motion is required, as the dies can be withdrawn when the screw is cut. They are adapted to the wants of every machine shop, and possess arrangements for facility of work, &c., which renders them invaluable to manufacturers of agricultural implements, carriages, wagons, iron railings, &c. The Excelsior Screw Cutters are supplied with complete sets of dies and taps, and are made for either steam or manual labor, at prices within the reach of all. Manufactured and for sale by J. A. FAY & CO., Cincinnati, Ohio.
And may be had at the following places:—C. P. Rogers & Co., Norwich, Conn.; J. A. Fay & Co., Worcester, Mass.; J. A. Fay & Co., Keene, N. H.; Fay & Co., Machinists, Chicago, Ill.; Rudolph & Humes, St. Louis, Mo.; Vose & West, New Orleans, La.

J. & WM. W. CUMBERLAND'S IMPROVED Patent Metallic Oil, for machinery and burning. Warranted to last longer than sperm oil. Manufactured only by the New York Cumberland Metallic Oil Works, foot of East 24th st. Office, No. 205 Broadway, New York. Under the inventor's superintendence. N. B.—See that our brand "New York Cumberland Metallic Oil Works, foot of East 24th street," is upon every package, however small.

WARTH'S SELF-ACTING WOOD-TURNING LATHES.—The best and most practical now in use; one boy will accomplish the work of four men. State and County rights for sale. Address A. WARTH, care W. H. Bertling, 23 Chambers st., New York, or the manufacturers, who have machines of all sizes on hand. Also a general assortment of machinists tools. Circulars sent. Address CARPENTER & PLASS, 479 First ave., New York.

PATENT RIGHT.—FOR SALE—A VALUAble patent right for England for an article introduced in this country sufficiently to fully test its merits. Apply to TUTTLE & BAILEY, No. 301 Pearl st., New York.

EIGHTH WONDER OF THE WORLD—Map of the Submarine Telegraph between America and Europe, with its various communications on the two continents for sale, wholesale and retail by McKee & Stilwell, Sole Agents, at their news depot, No. 89 Nassau st., Sun Buildings. Booksellers and news agents can be supplied, at $6 per hundred; single copies 10 cents. Single copies mailed to any part of the country. Stamps can be remitted. McKEE & STILWELL, News Depot, Sun Building.

$1,500. A RARE CHANCE IS OFFERed to any man with a small capital to buy shares in several valuable patents, on which at least $20,000 may be realized in less than two years. Address N. P. L., Boston, Mass.

HARRISON'S GRIST MILLS—20, 30, 36 AND 48 inches diameter, at $100, $200, $300 and $400, with all the modern improvements. Also, Portable and Stationary Steam Engines of all sizes, suitable for said Mills. Also, Bolters, Elevators, Belting, &c., &c. Apply to S. C. HILLS, 12 Platt st., New York.

1858. NINTH EXHIBITION OF THE CHICAGO MECHANICS' INSTITUTE. The Ninth Exhibition of American Manufactures and Mechanic Arts, under the direction of the Chicago Mechanics' Institute, for the promotion of the Mechanic Arts, will be opened at Chicago on Saturday evening, September 4th, and continue to Friday evening, September 17th, 1858. As there is to be no Fair by the Cook County Agricultural Society this fall, premiums will be offered for farm products by request of the Agricultural Society, the list of which will soon be made out. For circulars or any further information, apply at the reading room or by letter to
LEWIS DODGE, Secretary.

SUNDIALS—9 INCH. DIAMETER, MOUNTED on an iron Doric column, 3 feet. Equation of time tables engraved on the dial plate, also a reflector inserted, showing the course of the clouds. New design, accurate and highly ornamental. No suburban residence complete without one. Address the manufacturer, W. W. WILSON, Pittsburg, Pa.

CROSSETT'S PATENT STAVE CUTTER—Patented July 1, 1844; re-issued March 2, 1858; renewed and extended June 26, 1858. The above mentioned machine is warranted to cut more and better staves than any other machine in the United States, and is the most simple, cheap, and durable. I hereby caution all persons against using and vending said machine (the main features of which consist in the stationary knife and vibratory bed-piece) without the legal right to do so. Offenders will be dealt with according to law. All persons wishing an interest in the extended term of said patent can obtain it by addressing the undersigned at Joliet, Ill.
GEO. E. CROSSETT, Assignee.

ENGRAVING OF EVERY DESCRIPTION—Machinery, Patents, Maps, &c., by WM. J. BARKER, No. 23 North Sixth street, Philadelphia, Pa.

AMERICAN WATER WHEEL CO., MANUfacturers of Warren's Turbine Water Wheel—Warren & Damon's patent.—Three hundred and twelve of these turbines are now in successful operation in cotton and wool factories, flour mills, saw mills, &c., and are utilizing from 75 to 88 per cent of the power of the water under all heads, from one to thirty feet. The late improvement adds much to its efficiency and great economy in water power. It wholly obviates the well known evil—"the great loss of power from leakage at the periphery of the wheel," as long as it runs without adjustments. This improvement is equally applicable to all iron wheels. The patent right is for sale for a few States only. The fifth annual pamphlet published by the American Water Wheel Co. contains a complete description of the Warren Turbine, with illustrative engravings, a treatise on hydraulics, &c. It will be found useful and instructive to all millwrights and millowners. By application (two stamps enclosed), it will be forwarded to any part of the United States. All communications addressed to ALONZO WARREN, Agent, American Water Wheel Co., 31 Exchange st., Boston, Mass., will be promptly attended to.

BELLOWS' PATENT DRY CLAY BRICK MACHINE.—The undersigned has invented a machine that for cheapness, simplicity, durability, and the production of a superior article, is unequaled. Machines and rights for sale. EPH. H. BELLOWS,
Worcester, Mass.

LANE & BODLEY, MANUFACTURERS OF Wood-working Machinery and Circular Saw Mills. Especial attention given to hub, spoke, felloe, and wheel machinery. Shafting and pulleys turned and balanced, $8 to $10 per 100 lbs. Corner of John and Water streets, Cincinnati, Ohio.

WROUGHT IRON PIPE, CAST IRON PIPE, Galvanized Iron Pipe (a substitute for lead), Stop Cocks and Valves, Boilers and Boiler Flues. Pumps of all kinds sold at the lowest market rates by JAMES O. MORSE & CO., 76 John st., and 29, 31 and 33 Platt st., New York.

HARRISON'S 20 AND 30 INCH GRAIN Mills constantly on hand. Address New Haven Manufacturing Co., New Haven, Conn.

5,000 AGENTS WANTED—TO SELL four new inventions. Agents have made over $25,000 on one. Better than all other similar agencies. Send four stamps and get eighty pages particulars, gratis. EPHRAIM BROWN,
Lowell, Mass.

WOODWORTH PLANERS—IRON FRAMES to plane 18 to 24 inches wide—at $90 to $110. For sale by S. C. HILLS, 12 Platt street New York.

IRON PLANERS AND ENGINE LATHES of all sizes, also Hand Lathes, Drills, Bolt Cutters, Gear Cutters, Chucks, &c., on hand and finishing. These tools are of superior quality, and are for sale low for cash or approved paper. For cuts giving full description and prices, address "New Haven Manufacturing Co., New Haven, Conn."

S. D. BARNETT, MALLEABLE AND GREY Iron Foundry, Hamilton, corner of McWhorter st. Newark, N. J. Orders promptly attended to.

SECOND-HAND MACHINISTS' TOOLS—Viz., Engine and Hand Lathes, Iron Planers, Drills, Chuck Lathe, Gear Cutter and Vises, all in good order, and for sale low for cash. Also one new first-class Woodworth Planing and Matching Machine. Address FRANKLIN SKINNER, Agent, 14 Whitney avenue, New Haven, Conn.

ECCENTRIC SCREW AND GRIPPING WRENCH—Hyde's patent—for sale by all hardware stores. Proprietors, GRAY BROTHERS, New York City.

PATENT OFFICE MODELS CAREFULLY made on scientific principles, at low prices, by H. SHLARBAUM & CO., 300 Broadway, New York. References at the office of this paper.

STEAM WHISTLES—IMPROVED PATterns for locomotive and stationary engines. A large assortment constantly on hand. Manufactured by HAYDEN, SANDERS & CO.,
306 Pearl st., New York.

PUSEY'S HORSE POWER GOVERNOR—See cut in No. 45, Vol. XIII, SCI. AM. Shop rights for sale, to build in combination with the powers. Independent governors manufactured exclusively, and for sale by the patentee, LEA PUSEY, near Wilmington, Del. Agents wanted.

CLOCKS—TOWN CLOCKS OF ALL SIZES, Regulators and Timepieces for all purposes. Dials for illuminating. VOSBURGH & CO., Agents, No. 26 Liberty street, New York. JOHN SHERRY, Manufacturer, Sag Harbor, N. Y.

MARYLAND INSTITUTE, BALTIMORE.—The Managers of this Institute, encouraged by the success of former efforts, announce, with confidence of continued success, their Eleventh Annual Exhibition, to be opened in the Institute's spacious building on the 5th of October, and continue open four weeks. From the 27th to the 30th of September, inclusive, articles will be received for competition and premium, afterwards for exhibition only. Persons from all parts of the Union are invited to contribute. Aside from the general advantages of this Institute for the exhibition of products of the skill and industry of their countrymen, the Managers submit that the present is an opportunity which none should allow to pass unimproved. As business is now rallying from its unparallaled depression, he who, by a judicious exhibition of his ability to meet the demands of that revival, and secure the attention and confidence of the community, insures success, and paves the way to competence and fortune. Circulars with rules, &c., will be promptly furnished on application to JOHN S. SELBY, Actuary.
D. L. BARTLETT, Chairman.

STEAM ENGINES, STEAM BOILERS, Steam Pumps, Saw and Grist Mills, Marble Mills, Rice Mills, Quartz Mills for gold quartz, Sugar Mills, Water Wheels, Shafting and Pulleys. The largest assortment of the above in the country, kept constantly on hand by WM. BURDON, 102 Front street, Brooklyn, N. Y.

THE WORKS OF THE AUBIN GAS CO., (General Office, No. 44 State st., Albany, N. Y.,) as now perfected, are adapted to all materials and localities, and are in successful operation in villages, factories, and private dwellings. For full information as to cost, probable income of public works, &c., apply as above. For plans, &c., see SCIENTIFIC AMERICAN of March 13th.

MACHINE BELTING, STEAM PACKING, ENGINE HOSE.—The superiority of these articles, manufactured of vulcanized rubber, is established. Every belt will be warranted superior to leather, at one-third less price. The Steam Packing is made in every variety, and warranted to stand 300 degs. of heat. The hose never needs oiling, and is warranted to stand any required pressure; together with all varieties of rubber adapted to mechanical purposes. Directions, prices, &c., can be obtained by mail or otherwise, at our warehouse. NEW YORK BELTING AND PACKING COMPANY. JOHN H. CHEEVER, Treasurer, No. 6 Dey street, New York.

These machines have no rival.—[Scientific American.

WHEELER & WILSON'S SEWING MACHINES, 343 Broadway, New York, received the highest premiums awarded in 1857 by the American Institute, New York; Maryland Institute, Baltimore; and at the Maine, Connecticut, Illinois, and Michigan State Fairs. Send for a circular containing editorial and scientific opinions, testimonials from persons of the highest social position, &c.

LAP-WELDED IRON BOILER TUBES—Prosser's Patent.—Every article necessary to drill the tube-plates and set the tubes in the best manner.
THOS. PROSSER & SON, 28 Platt st., New York.

WELLINGTON MILLS EMERY—CONsumers will look for copyright label on each cask, by whomsoever sold, and they will be sure of the best emery. Casks contain 200 pounds each. Testimonials of its superiority from Collins' Axe Co., and many others. GEO. H. GRAY & DANFORTH,
Boston, Mass.

SLIDE LATHES, IRON PLANERS, UP right Drills, Slotting and Boring Machines, Universal Chucks, and a large assortment of machinists' tools, at greatly reduced prices. Address CHARLES H. SMITH, 135 North Third st., Philadelphia, Pa.

BELTING AND PACKING—Niagara Falls Paper Manufacturing Co., Niagara Falls, April 20, 1858. United States Gutta Percha Co.: We duly received the Gutta Percha Belting ordered from you, and after giving it a thorough test the past winter, on our heaviest engines, constantly exposed to water, ice and oil, and making 140 to 160 revolutions per minute; and again on two of our largest "Gwynne Pumps," making from 600 to 700 revolutions per minute, they have given us entire satisfaction, and we think it decidedly the best belting we ever used, and you may look for our future orders as required. S. PETTIBONE,
Treasurer and Superintendent.
For sale by the UNITED STATES VULCANIZED GUTTA PERCHA CO., No. 66 Liberty street, New York.

NEW ORLEANS—VOSE & WEST, Commission Merchants for the sale of Machinery, Agricultural Implements, &c., New Orleans. Refer to W. P. Converse & Co., 42 Pine street, New York.

ENGRAVING ON WOOD AND MECHANICAL DRAWING, by RICHARD TEN EYCK, Jr., 128 Fulton street, New York, Engraver to the Scientific American.

EVERY MILLWRIGHT, ALL MILLOWNERS, and those interested in hydrodynamics, should become acquainted with the merits and principles of the improved Fourneyron Turbine Water Wheel, or the "Universal Turbine," a wheel the most economical in the use of water, and giving the highest percentage, with a partially raised gate, of any yet discovered. It gives from 75 to 97 per cent of power, according to the size of wheel and head employed. For information address S. K. BALDWIN,
Laconia, N. H.
N. B.—For low falls of one, two, or three feet, also for any fall, it will surpass all others.

OIL! OIL! OIL!—FOR RAILROADS, STEAMERS, and for machinery and burning. Pease's Improved Machinery and Burning Oil will save fifty per cent., and will not gum. This oil possesses qualities vitally essential for lubricating and burning, and found in no other oil. It is offered to the public upon the most reliable, thorough and practical test. Our most skillful engineers and machinists pronounce it superior and cheaper than any other, and the only oil that is in all cases reliable and will not gum. The Scientific American, after several tests, pronounced it "superior to any other they have ever used for machinery." For sale only by the inventor and manufacturer, F. S. PEASE, 61 Main st., Buffalo, N. Y.
N. B.—Reliable orders filled for any part of the United States and Europe.

VAIL'S SPEEDWELL IRON WORKS, Morristown, N. J., manufacture Craig's Patent Double-acting Balance Valve Oscillating Steam Engines both stationary and portable, Knowles' Patent Muley, Portable, Gang and Re-sawing Mills, Sugar and Chinese Cane Mills and Sugar Pans, Grist Mills, Mill Irons, Rich's Water-wheels, Forgings and Castings. Orders for the above, and all descriptions of labor-saving machinery will receive prompt attention.
JOHN H. LIDGERWOOD & CO.,
No. 9 Gold street, New York.

CORLISS' PATENT STEAM ENGINES—About 250, most of them from 40 to 400 horse power, are now in operation. On application, pamphlets will be sent (by mail), containing statements of responsible manufacturing companies where these engines have been furnished, for the saving of fuel, in periods varying from 2½ to 5 years. Boilers, shafting, and gearing.
CORLISS STEAM ENGINE CO.,
Providence R. I.

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able, became unusually boisterous, so that the fleet were not ready to commence operations until late on the 25th of June.

The first splice was made between the Niagara and Agamemnon on the morning of Saturday, the 26th of June; and after each ship had payed out about three miles, the cable broke on board the Niagara, owing to its over-riding and getting off the pulley leading on to the machine. Both vessels put about and returned, a fresh splice was made, and again lowered over at half-past seven o'clock. The paying out proceeded beautifully until early on Sunday morning, when the signals suddenly ceased. The cable was cut, and the Niagara repaired to the rendezvous. The cause of the rupture was equally mysterious to those on board the Agamemnon, and no satisfactory conjecture has since been made.

The cable was again spliced on the 28th, and the steamers parted. Everything worked beautifully during that night, and the next day. But at nine o'clock P. M. on the 29th, the announcement of "No signals" was made on board the Niagara. At the time 142 miles of cable had been payed out. It was subsequently ascertained that the cable parted, for some reason unknown, about six fathoms from the stern of the Agamemnon. About 400 miles of cable were lost during these trials, the effect of which upon the public confidence in the final success of the undertaking was most depressing.

But the managers continued indefatigable. The fleet sailed a second time from Queenstown on the 17th of July, joined the cable on the 29th, and on the 5th of August the world had news of success."

The cost of the telegraph cable has been put down as follows :—

Price deep sea wire per mile,	$200
Price spun yarn and iron wire per mile,	265
Price outside tar per mile,	20
Total per mile,	$485
For 2,500 miles,	$1,212,500
For 10 miles deep sea cable, at $1,450 per mile,	14,500
For 25 miles shore ends, at $1,250 per mile	32,250
Total cost,	$1,259,250

As soon as it was known that the cable was laid some amusing incidents occurred. One poor lady, whose husband had been detained in jail on account of his inability to pay a fine imposed upon him for "indulgin' in his wakeness," (as she termed it,) begged a telegraph operator "to tell her aunt in Derehigney, Ireland, to sind her the loan of tin dollars." When informed that a New York merchant had just paid fifty-seven dollars for a despatch of as many words to London, and that it would cost her about ten dollars to get a message to Ireland, she exclaimed:—"Musha, what's the good ov a blissin' that's so dear?"

Mr. Field telegraphed Lieut. Maury the moment the success was certain, and the gallant lieutenant forwarded this communication to the *National Intelligencer*, of Washington, with some remarks, in which he shows that his prediction of the proper time to lay the cable proved to be correct. He says the following extracts, italics and all, are taken from a letter written at the Observatory on the 28th March, 1857, to the Company, upon the best time for laying the cable, and which have happily proved to be correct :—

"Nevertheless, the enterprise upon which you are engaged is an important one. Good weather for it is very desirable, nay, almost indispensable; and these barometric anomalies are suggestive. Perhaps it would be wise for the steamers not to join cables until after the 20th of July. I think between that time and the 10th of August the state of both sea and air is usually in the most favorable condition possible; *and that it is the time which my investigations* indicate as the most favorable for laying down the wire. I recommend it, and wish you good luck."

The landing place of the eastern end of the cable, Valentia, or Valencia, is a town or village at the southest extremity of the island of Valentia, Ireland, and is beautifully enclosed among brown mountain slopes. The harbor is deep, capacious, and deeply land-locked, and being the most western port of Europe, has lately attracted considerable attention, in consequence of a proposal to make it the western terminus of railway communication, and a principal station for Atlantic steamers.

Trinity Bay and Bull's Arm Bay, the western landing place, as our readers are doubtless aware, are on the eastern coast of the island of Newfoundland, about Latitude 47 N., and Longitude 52 W.

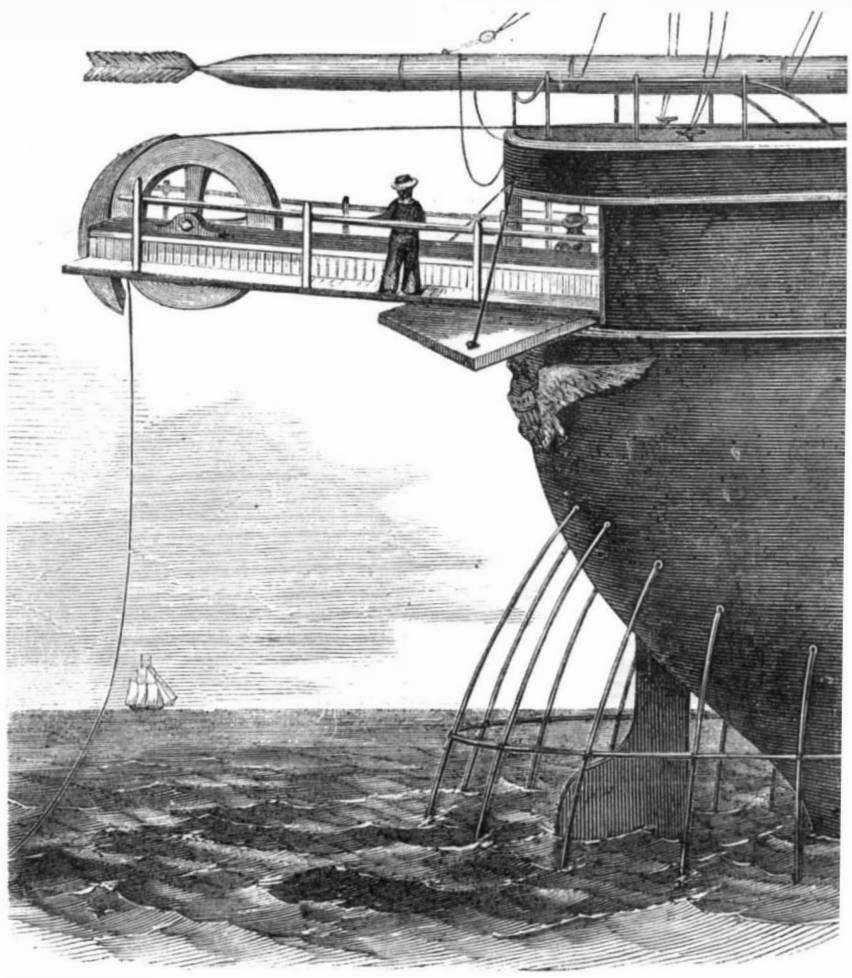
The leading spirit of this great undertaking has unquestionably been Cyrus W. Field, of this city, and consequently he is receiving compliments and praise on all hands in paragraphs like the following:—

"So much the more, therefore, do we honor the courage and coolness which impelled Mr. Field and his backers to persevere in the attempt to lay the cable this season, in the face of discouragements more formidable than attended the sailing and voyage of Columbus in his memorable quest of a New World."

The country rings with the praises of Mr. Field; shall their echoes die away and leave no mark of their existence? Richard Cobden received from the British people a free gift of $500,000 for his agency in effecting the repeal of the Corn Laws; shall no effort be made to attest, in some substantial manner, the pride and gratitude with which the American people regard Mr. Field's heroic achievement?

We present a view of the stern of our

STERN OF THE STEAMSHIP NIAGARA.



beautiful steamship, the *Niagara*, with the projecting machinery by which she laid the Atlantic Cable. It differs from that first used in many particulars, and more especially in the addition of the gallery or platform along the sides, for the purpose of affording the engineers entire control of the cable as it "run out." The iron network was to prevent the cable getting foul of the propeller and rudder. On examination of the engraving it will be seen that the telegraphic wire, as it was payed out, passed over the poop and through the grooved wheel, the outer edge of which is covered by a shell, which kept the cable from slipping out of the groove.

The value of such a quick means of communication across the Atlantic may be better estimated when we recollect that the Battle of New Orleans was fought on the 8th of January, 1815, and the treaty of peace had been signed at Ghent, after six months negotiation, on the 24th of December, 1814. Had the telegraph then existed, how many valuable lives would have been saved to adorn their country and be an honor to their age, for brave men are always the strength of a community.

In the construction of a submarine telegraph, there are certain conditions to be observed and certain points to be attained. The first is that the conducting wire shall be perfect, and of the best conducting power, so that it may be made thin and light. Then this wire must be protected and perfectly insulated by some non-conducting material, such as india-rubber and gutta percha. This must be protected from the action of the waves, and the abrasion of the pebbles and rocks on the bed of the ocean or sea, and iron wire best serves this purpose. Many cables have been constructed on these principles, and the following are at present laid :—

SUBMARINE CABLES.

	Date.	Miles.
Dover and Calais,	1850	24
Dover and Ostend,	1852	76
Holyhead and Howth,	1852	65
England and Holland,	1853	115
Portpatrick and Donaghadee (2 cables)	1853	26
Italy and Corsica,	1854	65
Corsica and Sardinia,	1854	10
Denmark—Great Belt,	1854	15
Denmark—Little Belt,	1854	5
Denmark—Sound,	1855	12
Scotland—Frith of Forth,	1855	4
Black Sea,	1855	400
Solent, Isle of Wight,	1855	3
Straits of Messina,	1856	5
Gulf of St. Lawrence,	1856	74
Straits of Northumberland,	1856	10⅛
Bosphorus,	1856	1
Gut of Canso, Nova Scotia,	1856	2
St. Petersburg to Cronstadt,	1856	10
Atlantic Cable—Valentia Bay to Trinity Bay,	1858	1950
Total,		2,872⅛

It has also been found necessary to diminish the weight per mile with the length, and the weight of the Atlantic cable is little over a tun a mile.

There is some curiosity felt about the species of electrical instruments to be used in the transmission of messages across the ocean. The apparatus first employed will be that of Messrs. Whitehouse & Bright, the English electricians in the service of the Company. By their recording machines a powerful current of electricity is demanded of such power, perhaps, as to make it necessary that some more delicate instrumentality should be put in requisition. Hughes' telegraph can be set in motion by the smallset amount of the electric fluid. It discards altogether atmospheric air as an agent in propelling the machinery, and wastes no time in going over the whole range of the alphabet, as is the case with some other printing telegraphs. One wave of electricity suffices for a letter, and sometimes for a whole word; whereas, by Morse's system, it takes five waves to perform the same labor, and by House's, ten. Still, the friends of the last named telegraphs contend that their favorite method of telegraphing has some advantages not possessed by the Hughes plan.

Many find it difficult to realize the events of the last few days, and even yet some can scarcely believe that the cable is laid, and that Europe is joined to America. But there is no room for doubt. That which thousands said was impossible has been accomplished, and each one should feel a spirit of devout thanksgiving within them, a hearty wish that Cyrus W. Field and his coadjutors may be properly rewarded for their great energy and perseverance, and a hope that the Flag of the Atlantic Telegraph Company—on which the "stars and stripes" and "union jack" are combined—may ever float as an angel of peace between the two nations.

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